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ABSTRACT

This report details results of the 1995-96 study of the Kentucky Education Reform Act (KERA) Preschool Programs, the fifth such evaluation of the state-mandated preschool programs of at-risk 4-year-old children and 3- and 4-year-olds with disabilities. Following an executive summary and explanation of the methodology for the evaluation, this report details results for each of the five evaluation areas: (1) the nature and extent of implementation of the preschool program; (2) gains achieved by 1995-96 preschool participants; (3) the relationship between program quality and student outcomes; (4) performance of participants compared with that of same-age eligible non-participants and non-eligible peers; and (5) the long-term effects of participation in the program for former participants. Among the results noted are the following: (1) program quality appears to be fairly consistent across individual preschool programs around the state, and parents are generally pleased with the program; (2) at-risk children made more than one month gain for each month in the program in the domains of personal, social, adaptive, gross motor, and fine motor skills; (3) while there were few significant correlations between program quality and student outcomes, those programs with higher total scores on the "Configuration Map for Preschool Programs" also have students whose Proportional Change Index scores are higher in the areas of receptive communication, expression communication, and total communication; (4) kindergarten children who had attended the preschool program were viewed by their teachers as being better prepared for kindergarten than their eligible but non-participating peers, and as prepared as a random group of their non-eligible peers; and (5) with only a few exceptions, the state preschool participants continue to do as well as a random group of peers through the fourth grade on most measures of social skills and academic progress. (HTH)

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THIRD PARTY EVALUATION OF THE KENTUCKY EDUCATION REFORM ACT PRESCHOOL PROGRAMS

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Table of Contents

ACKNOWLEDGEMENTS vii

EXECUTIVE SUMMARY viii

INTRODUCTION 1

PURPOSES OF THE 1995-1996 PROGRAM EVALUATION OF KENTUCKY PRESCHOOL PROGRAMS 4

Assessments Administered to Each Cohort 6

EVALUATION QUESTION 1

Sampling Strategy 7

Methodology 7

Instrumentation 8

Data Collection Team 9

Data Analysis 9

Results

Early Childhood Environment Rating Scale (ECERS) 10

Configuration Map for Preschool Programs 13

Correlation of ECERS and Configuration Map 15

Parent Survey 16

Family Resource Coordinator/Preschool Coordinator/Teacher 23

EVALUATION QUESTION 2

Methodology 27

Instruments

Battelle Developmental Inventory 27

Early Literacy Measures 30

Social Skills Rating System 30

Results

Developmental Skills 31

Pretest/Posttest Developmental Gains of Economically At-Risk Preschoolers 31

Projected Year-Long Developmental Gains of Economically At-Risk Preschoolers 33

Proportional Change Index for Economically At-Risk Preschoolers 35

Pretest/Posttest Developmental Gains of Preschoolers with Disabilities 38

Projected Year-Long Developmental Gains for African-American Preschoolers 51

Social Skills 62

Pretest/Posttest Social Skills Gains for Economically At-Risk Preschoolers 63

Pretest/Posttest Social Skills Gains for Preschoolers with Disabilities 67
Pretest/Posttest Social Skills Gains for African-American Preschoolers 70

Early Literacy Skills 71
Pretest/Posttest Early Literacy Skills of Economically At-Risk Preschoolers 71
Pretest/Posttest Early Literacy Skills of African-American Economically At-Risk Preschoolers 72

EVALUATION QUESTION 3
Configuration Map for Preschool Programs and Student Gains 75
Early Childhood Environment Rating Scale and Student Gains 77
Correlation Between Proportional Change Index and Total Score of Early Childhood Rating Scale and Preschool Configuration Map 78

EVALUATION QUESTION 4
Purpose 79
Methods and Sampling Strategy 79
Results
Transition from Preschool to Primary 80
Pupil Behavior Inventory 84

EVALUATION QUESTION 5
Purpose 86
Participants 86
Methodology 87
Results
Primary Teacher Survey 87
Social Skills Rating System 92
Attendance 95
Referral to Services 96

REFERENCES 99

APPENDIX 1 100

APPENDIX 2 101

APPENDIX 3 102

APPENDIX 4 103

Figures in Executive Summary

Figure 1 Percentage of Parents Who Strongly Agree & Agree With Items in Parent Survey of 1995-96 Preschool Programs.....Page xi

Figure 2 Mean Scores of Projected Developmental Gains for 1995-96 Preschoolers.....Page xii

Tables And Figures in Report

Table 1 Assessments Administered to Each Cohort.....Page 6

Table 2 Means for ECERS Items, Sub-Scores, and Total Score.....Page 11

Table 3 Means for Configuration Map for Preschool Programs.....Page 14

Table 4 Type of Respondent for Parent Surveys.....Page 16

Table 5 Number and Percentage of Parents Who Were Offered Activities by the School and the Number and Percentage of Parents who Indicated They Had Participated in the Activities in 94-95 and 95-96.....Page 18

Table 6 The Extent to Which the Following Factors Prevented Parents From Being Involved in the Activities Offered by School.....Page 20

Table 7 Percent of Parents' Response to Survey.....Page 22

Table 8 Number of Children Sampled, Pre-Tested, Post-tested, and With Completed Records.....Page 27

Table 9 Mean Developmental Age Equivalents on the Battelle Developmental Inventory Domains at Pre- and Posttest, and Developmental Gains of Economically At-Risk Kentucky Preschoolers for 1995-96.....Page 32

Table 10 Program Efficiency Index and Projected School Year Developmental Gains of Economically At-Risk Kentucky Preschoolers for 1995-96.....Page 34

Table 11 Proportional Change Index for At-Risk Preschool Children on the Battelle Developmental Inventory for 1995-96 Preschoolers.....Page 37

Table 12 Mean Developmental Age Equivalents on the Battelle Developmental Inventory at Pre- and Posttest, and Developmental Gains of Developmentally Delayed Kentucky Preschoolers for 1995-96.....Page 38

Table 13 Program Efficiency Index and Projected School Year Developmental Gains of Developmentally Delayed Preschoolers for 1995-96.....Page 39

Table 14 Mean Developmental Age Equivalent on Battelle Developmental Inventory Domains at Pre- and Posttest, and Developmental Gains for 1995-96 Kentucky Preschoolers with Speech Delays.....Page 40

Table 15 Program Efficiency Index and Projected School Year Developmental Gains for 1995-96 Kentucky Preschoolers with Speech Delays.....Page 41

Table 16 Mean Developmental Age Equivalent on Battelle Developmental Inventory at Pre- and Posttest, and Developmental Gains for 1995-96 Kentucky Preschoolers with Severe Disability.....Page 42

Table 17 Program Efficiency Index and Projected School Year Developmental Gains for 1995-96 Kentucky Preschoolers with Severe Disabilities.....Page 43

Table 18 Means and Standard Deviations of Proportional Change Index on the Battelle Developmental Inventory for 1995-96 Kentucky Preschoolers with Disabilities.....Page 44

Figure 1 Mean Scores of Projected School Year Developmental Gains for 1995-96 Preschoolers.....Page 46

Figure 2 Mean Scores of Proportional Change Index (PCI) for 1995-96 Preschoolers.....Page 48

Figure 2a Mean Scores of Proportional Change Index (PCI) for 1995-96 Preschoolers Based on Children's Attendance.....Page 48a

Table 19 Mean Developmental Age Equivalent on the Battelle Developmental Inventory Pre- and Posttest, and Developmental Gains for 1995-96 At-Risk African-American Kentucky Preschoolers.....Page 50

Table 20 Program Efficiency Index and Projected School Year Developmental Gains for 1995-96 Economically At-Risk African-American Kentucky Preschoolers.....Page 51

Table 21 Mean Developmental Age Equivalent on the Battelle Developmental Inventory at Pre- and Posttest, and Developmental Gains for 1995-96 At-Risk African-American and Caucasian Kentucky Preschoolers.....Page 53

Table 22 Means of Program Efficiency Index (PEI) and Projected School Year Developmental Gains for 1995-96 Economically At-Risk African-American and Caucasian Preschoolers.....Page 55

Table 23 Program Efficiency Index (PEI) of BDI Domains for 1995-96 Preschoolers.....Page 57

Table 24 Program Efficiency Index (PEI) of BDI Domains for 1995-96 Preschoolers Based on Children's Present Days at School....Page 59

Table 25 Proportional Change Index (PCI) of BDI Domains for 1995-96 Preschoolers....Page 61

Table 26 Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Economically At-Risk Kentucky Preschoolers....Page 63

Table 27 Percentage of SSRS Sub-Scales Rated by Teachers as Being Fewer Than Average, Average, or More Than Average for 1995-96 Economically At-Risk Preschoolers....Page 64

Table 28 Percentage of SSRS Sub-Scales Rated by Parents as Being Fewer Than Average, Average, or More Than Average for 1995-96 Economically At-Risk Preschoolers....Page 66

Table 29 Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Kentucky Preschoolers with Developmental Delays....Page 67

Table 30 Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Kentucky Preschoolers with Speech Delays....Page 68

Table 31 Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Kentucky Preschoolers with Severe Disabilities....Page 69

Table 32 Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 African-American and Caucasian Economically At-Risk Preschoolers....Page 70

Table 33 Means and Standard Deviations of the Early Literacy Measures for 1995-96 Economically At-Risk Preschoolers....Page 72

Table 34 Means and Standard Deviations of Early Literacy Measures for 1995-96 African-American Economically At-Risk Preschoolers....Page 74

Table 35 Correlations Between Student Gains on BDI, SSRS, Early Literacy, and the Configuration Map for At-Risk Preschoolers....Page 76

Table 36 Correlations Between Student Gains on BDI, SSRS, Early Literacy, and the Early Childhood Environment Rating Scale for At-Risk Preschoolers....Page 77

Table 37 Correlation Between Proportional Change Index (PCI) and Total Scores of Early Childhood Environmental Rating Scale and Preschool Configuration Map....Page 78

Figure 3 Means Scores on Transition Questionnaire for 1995-96 Kindergarten Readiness Cohort....Page 81

Table 38 Mean Scores of Questionnaire of Transition From Preschool to P1 (Kindergarten) for 1995-96 Readiness Cohort....Page 83

Figure 4 Pupil Behavior Inventory for 1995-96 Kindergarten Readiness Cohort....Page 84

Table 39 Mean Scores of Five Factors in the Pupil Behavior Inventory Rated by Kindergarten Teachers for 1995-96 Readiness Cohort....Page 85

Table 40 Percentage of Participants and Comparison Groups Rated by Teachers as Doing Better Than and the Same as Most Children in Their Classroom Across All Cohorts....Page 89

Table 41 Kentucky Preschool Program Participants and Comparison Children's Ratings on the Social Skills Rating System by Teachers and Parents Across All Cohorts....Page 93

Table 42 Average Attendance Information of Kentucky Preschool Program Participants and Comparison Children of Cohorts 1 through 5 in 1995-96 Study....Page 95

Table 43 Percentage of Kentucky Preschool Participants and Comparison Children Referred to and Receiving Services in 1995-96 Study....Page 96

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EXECUTIVE SUMMARY

A COMPREHENSIVE PRESCHOOL PROGRAM

Kentucky's legislators recognized that the best way to enhance children's chances for success in school and their attainment of high levels of achievement is to ensure that they get off to a good start in school. Thus, a tuition-free statewide preschool program was created in 1990 to help young at-risk children reach their full potential. The Kentucky Preschool Program is a comprehensive early childhood educational delivery system which provides developmentally appropriate programs for children, integrated services to families, and interdisciplinary and interagency collaboration among organizations serving young children in Kentucky.

Eligibility

The Kentucky Education Reform Act was created as a means of equalizing educational opportunities for all children. The Kentucky Preschool Program targets four-year-old children from low-income families and three- and four-year-old children with disabilities. Each school district is required to make services available to all eligible children, either through district-provided programs or through contracts with other public or private service providers (KRS 157.3175 and KRS 157.226). Local districts must collaborate with Head Start to maximize use of federal funds available to serve eligible four-year-old children. The implementation of the Kentucky Preschool Program was mandatory for all districts beginning in the 1991-1992 school year.

Eligibility for the program is determined in two ways. First, four-year-old children who qualify for free lunch under the national school lunch program are considered at-risk and thus are eligible for the program. Second, three and four-year-old children with disabilities who qualify for services under Public Law 99-457 are eligible.

Purposes of the 1995-96 Program Evaluation of Kentucky Preschool Programs

The 1995-1996 study of the Kentucky Preschool Programs constitutes the fifth year of the longitudinal evaluation of the state mandated preschool programs for at-risk four-year-olds and three- and four-year-old children with disabilities. The five major questions addressed during this year's evaluation were:

1. What is the nature and extent of implementation of the Kentucky Preschool Program?

2. What developmental gains were achieved by the 1995-1996 Kentucky Preschool participants?

3. What is the relationship between program quality and student outcomes?

4. In the first year of primary, how does the performance of the Kentucky Preschool participants compare with the performance of same-age eligible non-participants and non-eligible peers?

5. What are the long-term effects of participation in the Kentucky Preschool Program on former participants and their comparisons in the five previous cohorts?

METHODOLOGY

Sampling Procedure for District Selection

Thirty-six districts (24 district with provided programs and 12 districts with blended programs) made up the initial sample. These districts were identified in the Fall of 1991 using a stratified sampling strategy designed to yield a representative sample of geographic regions (east, west, central), economic development levels (high, low), and program type (district provided verses blended). These districts served as research sites for the preschool children in cohorts 1, 2, 3, 4 and 5. These districts continue to be involved in the project as we collect follow-up data from teachers and parents on these children as they progress through the primary program.

This year, 22 districts were added to the sample. The 17 classrooms in districts with blended programs and the 7 district provided classrooms were randomly selected from the eight Service Center Regions. All children in these 24 sites were included in the study unless their parents chose not to allow them to participate.

Selection Procedure for the Readiness Cohort

Kindergarten classrooms in the new 22 districts were recruited for participation in this part of the study. The groups were randomly selected for participation: a) children who had participated in the Kentucky Preschool Program the previous year; b) children who were eligible for the Kentucky Preschool Program the previous year, but who had not participated; and c) children who were not eligible for and did not participate in the Kentucky Preschool Program the previous year.

Instrumentation

A variety of measures were used to assess the developmental, social, and academic gains of the Kentucky Preschool Program participants. The 1995-1996 Kentucky Preschool participants received the Battelle Developmental Inventory and two Early Literacy

Measures in the fall (pretest) and the spring (posttest). Teachers and parents of these children also completed the Social Skills Rating Scale in the fall (pretest) and the spring (posttest).

Current teachers of children in cohorts 1, 2, 3, 4, and 5 completed the Social Skills Rating Scale, and a survey of the children's academic progress and projected future success in school. Teachers also completed the Primary Teacher Survey which required them to rate children in three areas: a) attainment of Kentucky's Learning Goals; b) performance in the curriculum domains; and c) expectations for future success. Parents also completed the Social Skills Rating Scale and Parent Survey.

Teachers of children in the readiness cohort completed an adapted version of the Pupil Behavior Inventory and the Transition From Preschool to P1 (Kindergarten). The Transition Questionnaire asked teachers to rate children's readiness for P1 (Kindergarten).

Results

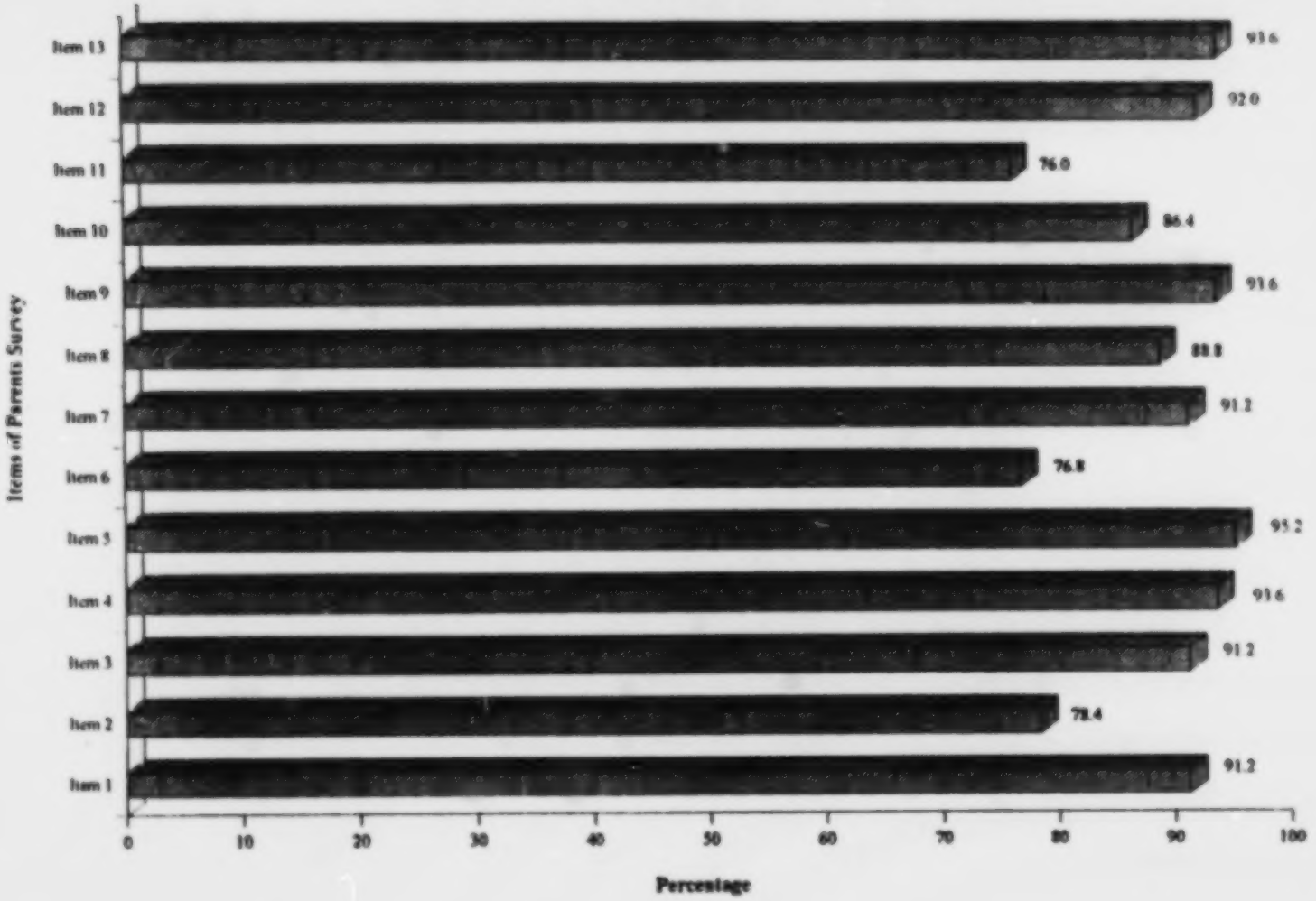
Question 1:

What is the nature and extent of implementation of the Kentucky Preschool Program in Kentucky?

Results indicate that there is a high correlation between the Early Childhood Environment Rating Scale and the Configuration Map for Preschool Programs ($r = .88, p < .05$). Programs that score well on the in-depth classroom measure (Early Childhood Environment Rating Scale) also score well on the more global program evaluation tool (Configuration Map for Preschool Programs). The data indicate that program quality appears to be fairly consistent across individual preschool programs around the state for the last several years. All 24 classrooms in the 1995-1996 study scored at or above average in all areas except one.

Parents are generally pleased with the Kentucky Preschool Program. Figure 1 shows parent satisfaction with the Kentucky Preschool Program. In addition, the survey asked parents about the types of activities offered to them by the school. Parents reported that the most frequently offered activity was to help in the classroom. Parents most frequently participated in conferences with the teacher. Parents reported that schedule conflicts are the largest barrier to their participation in activities offered by the school.

Figure 1
Percentage of Parents Who Strongly Agree & Agree With Items in Parent Survey of 1995-96 Preschool Program (N=120)



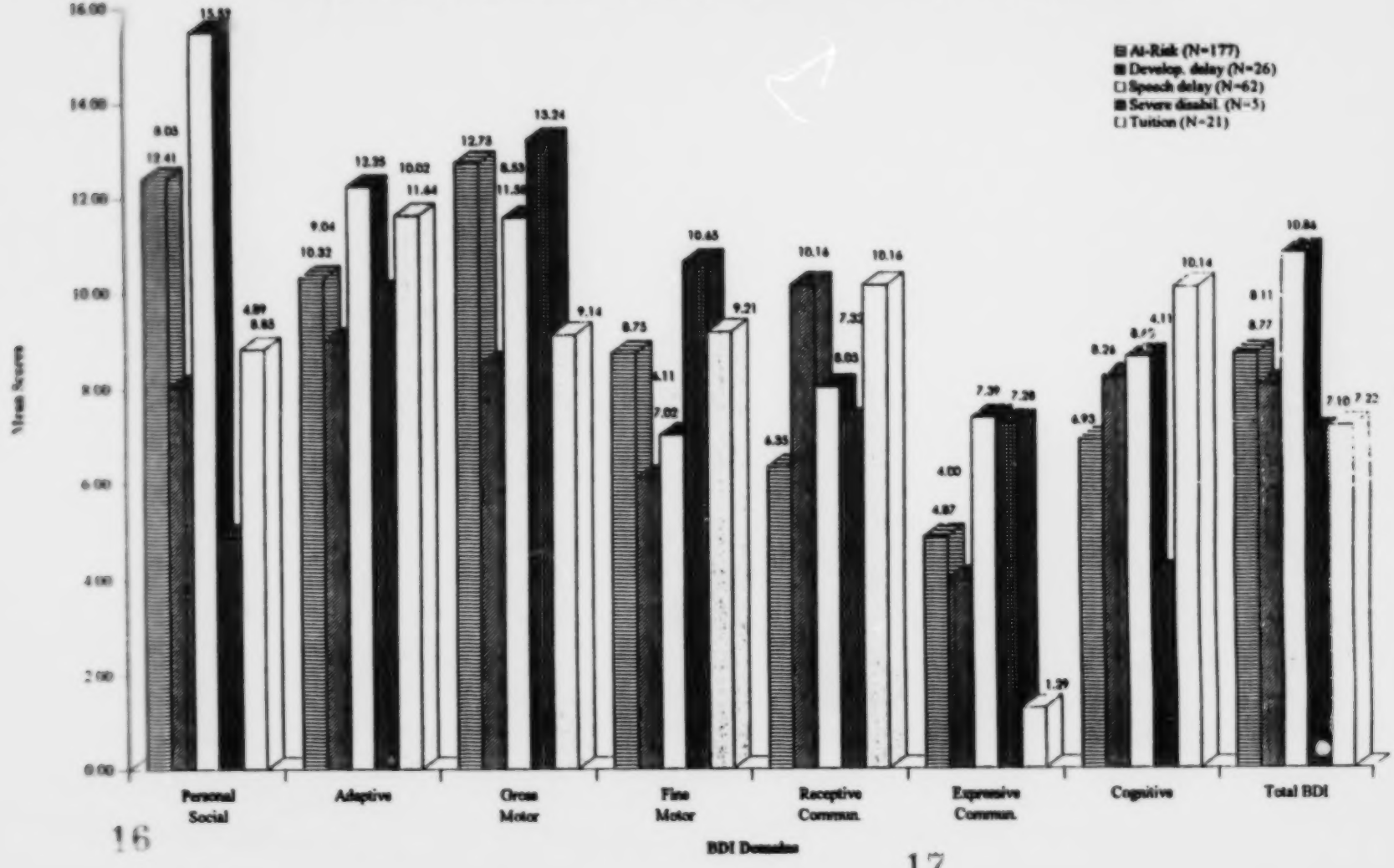
Parents response rate is 41.2%.

Question 2:

What developmental gains were achieved by the 1995-1996 Kentucky Preschool participants?

Figure 2 presents a graphic summary of the projected developmental gains of four groups of 1995-1996 Kentucky Preschool participants on the Battelle Developmental Inventory. The rates of gain for economically at-risk preschoolers range from a high of 12.75 months in gross motor skills to a low of 4.87 months in expressive communication skills. At-risk children made more than one month gain for each month in the program in the domains of personal social, adaptive, gross motor, and fine motor.

Figure 2
Mean Scores of Projected School Year Developmental Gains for 1995-96 Preschoolers



16

17

Positive gains were observed across all groups of children with disabilities. The rates of gain for children with developmental delays were relatively even across domains, though lower in the fine motor and expressive communication domains. Children with speech delays made gains ranging from a high of 15.52 months in the personal social domain to a low of 7.02 months in fine motor skills. Children with severe disabilities made the most progress in the domains of gross motor, fine motor, and adaptive, all above one month of gain per month in the program.

Participation in the Kentucky Preschool Programs appears to enhance the skills necessary for children's successful functioning in the educational environment. Both parents and teachers note particular improvements in the children's development of self-control. As children's social skills develop, the children's problem behaviors are observed less often. Significant gains were also made from pretest to posttest in important early literacy skills.

Question 3:

What is the relationship between program quality and student outcomes?

While there are few significant correlations between program quality and student outcomes, it does appear that the programs which have a higher total score on the Configuration Map For Preschool Programs also have students whose Proportional Change Index scores are higher in the areas of receptive communication, expressive communication, and total communication.

Question 4:

In the first year of primary, how does the performance of the Kentucky Preschool participants compare with the performance of same-age eligible non-participants and non-eligible peers?

Children in P1 (kindergarten) who attended the Kentucky Preschool Program were viewed by their teachers as being better prepared for kindergarten than their peers who were eligible for but did not attend the Kentucky Preschool Program. In addition, the participants were viewed by their teachers as being as prepared as a random group of their non-eligible peers.

Question 5:

What are the long-term effects of participation in the Kentucky Preschool Program on former participants and their comparisons in the five previous cohorts?

The data from the Primary Teacher Survey and the Social Skills Rating Scale indicate that participation in the Kentucky Preschool Programs continue to have an impact on children as they move through the Primary Program. With only a few exceptions, the state preschool children continue to do as well as a random group of peers through the fourth grade on most measures of social skills and academic progress.

Summary

Results indicate that the Kentucky Preschool Program is achieving the goal of reducing the gap between at-risk children and the rest of the children in their classes. Results from the last four years reveal that former Kentucky Preschool participants are scoring as well or better than a random sample of their peers on a number of measures of academic progress and expectations for future success in school and life. However, children in the oldest cohort who participated in the Kentucky Preschool Program during the first year of implementation (1990-1991) are receiving lower ratings on several measures of academic progress and social skills than a random sample of the peers. Whether this is due to a fade out effect of initial positive results or to the fact that the program was in its first year of implementation can only be determined through continued study of children who have participated in the programs during the first six years of implementation.

INTRODUCTION

Although kindergartens have existed in this country since 1860, it has only been since the 1920's that preschools or nursery schools have been in existence. By 1930 cooperative nursery schools had become popular with the total number of nursery schools growing to approximately 260. In 1933 as a result of the Work Projects Administration endorsing a plan to employ out of work teachers to remediate the effects of the depression on young children, the number of nursery schools grew to 1,700. The advent of World War II resulted in women working outside their homes, which meant arrangements had to be made for the care of their small children. In 1946, the Lanham Act was passed which provided federal funds to build and staff child care centers. The child care needs of families expanded the hours of operation and the ages of the children in the nursery school setting (Braun & Edwards, 1972).

In the 1950's and 1960's pervasive concerns about the role of poor children and families in an affluent society spawned the "War of Poverty." The Head Start Program was part of the movement that directed federal funds to early childhood education for an impoverished spectrum of the society, thus increasing the number of preschool/nursery school programs. Tuition-supported nursery schools also increased during this period, with enrollment of three-and four-year-olds rising from 800,000 in 1965 to 1,150,000 in 1970. At the same time kindergartens expanded in almost all states, accommodating two-thirds of the nation's five-year-olds (Boyer, 1991).

Between 1940 and 1989, preschoolers who had no parent in the home full-time to provide care and education jumped from 13% to 52%. The increase in dual-earner families and one-parent families has increased the demand for preschool programs. In 1990 four million children attended their first day of "preschool." They are among the eight million children under the age of five who enroll each year in some type of preschool program outside the home (Hernandez, 1993).

In 1994, thirty-two states offered pre-kindergarten programs at an investment of approximately $665 million. Most of the state programs targeted children who were considered to be at risk of school failure. The largest per-capita support was provided by

the states of Kentucky, Texas, Alaska, Florida and South Carolina (Adams & Sandfort, 1994).

Kentucky's investment in preschool programs was a result of the Kentucky Education Reform Act. One component was a tuition-free preschool program created to help prepare young at-risk children to be ready for school. Kentucky's legislators recognized that the best way to enhance children's chances for success in school and their attainment of high levels of achievement was to ensure that they got off to a good start in school. The Kentucky Preschool Program was established as a comprehensive early childhood educational delivery system designed to provide developmentally appropriate programs for children, integrated services to families, and interdisciplinary and interagency collaboration among organizations serving young children.

The Kentucky Education Reform Act was created as a means of equalizing educational opportunities for all children. This resulted in a state funded preschool program for four year-old children who are at-risk of school failure and three and four year-old children with disabilities. The Kentucky Preschool Program defined children as being at-risk if they qualify for free lunch under the National School Lunch Program. Thus, at-risk is defined based on the income of the family. Children with disabilities who qualify for services under P.L. 99-457, the Individuals with Disabilities Education Act, also are eligible for the Kentucky Preschool Program. Each school district is required to make services available to all eligible children, either through district-provided programs or through contracts with other public or private service providers (KRS 157.3175 and KRS 157.226). Local districts must collaborate with Head Start to maximize use of federal funds available to serve eligible four-year-old children. The implementation of the Kentucky Preschool Program was mandatory for all districts beginning in the 1991-1992 school year.

Developmentally Appropriate Programs

The Kentucky Preschool Program is a developmentally appropriate program that focuses on the physical, intellectual, social, and emotional development of young children. In keeping with the guidelines of the National Association for the Education of Young Children (NAEYC), the administrative regulations (704 KAR 3:410) require safe learning environments that: provide for children's active involvement in their own learning; enable

each child to progress at his/her own rate; include a meaningful curriculum that is both relevant and concrete; nurture self-respect and foster positive self-esteem; and involve parents and support their efforts to help their children learn. Provisions for meeting children's individual needs are required.

In addition to the provision of a half-day developmentally appropriate educational program, the Kentucky Preschool Programs provide the following comprehensive services:

- at least one meal per day and appropriate nutrition information as part of the curriculum;
- complementary parent education, with a minimum of 2 home visits as well as opportunities for other involvement;
- developmental screening (cognitive, communication, adaptive, motor, and social-emotional skills);
- coordination with medical, health, mental health, and social agencies to meet the comprehensive needs of children and families.

Purposes of the 1995-1996 Program Evaluation of Kentucky Preschool Programs

The 1995-1996 study of the Kentucky Preschool Programs constitutes the fifth year of a longitudinal evaluation of the state mandated preschool programs for at-risk four-year-olds and three- and four-year-old children with disabilities. The specific questions that were addressed during this years evaluation were:

1. What is the nature and extent of implementation of the Kentucky Preschool Program in Kentucky?

2. What developmental gains were achieved by the 1995-96 Kentucky Preschool participants in the following areas:
   a. Developmental Skills
   b. Social Skills Related to School Success
   c. Early Literacy Skills

3. What is the relationship between program quality and student outcomes?

4. In the first year of primary, how does the performance of the Kentucky Preschool participants compare with the performance of same-age eligible non-participants and non-eligible peers in terms of readiness as measured by:
   a. Transition Skills
   b. Classroom Behavior

5. What are the long-term effects of participation in the Kentucky Preschool Program on former participants and their comparisons in the five previous cohorts (1990-91 through 1994-95) on the following measures:
   a. Academic Performance and Competence
   b. Expectations for Future School Success
   c. Social Skills
   d. Problem Behaviors
   e. School Attendance

f. Referral for Special Services

Assessments Administered to Each Cohort

Table 1 provides an overview of the five year project. Throughout this report, the children will be referred to by the cohort specified in Table 1 (e.g., Cohort 1 = 1990-91 Preschoolers). Cohort 1 is made up of children who attended the Kentucky Preschool Program during the first year of implementation. Because the Kentucky Preschool Program was not started until several months into the 1990-91 school year, the children in cohort 1 did not receive a full year of the program. In addition, the Third Party Evaluation did not begin until the 1991-92 school year. Thus, we have no data on the children in cohort 1 during their preschool year.

Table 1
Assessments Administered to Each Cohort

	1991-92 Evaluation	1992-93 Evaluation	1993-94 Evaluation	1994-95 Evaluation	1995-96 Evaluation
Cohort 1 (1990-1991 Preschoolers)	Battelle Screening Harter Teacher SSRS Post	Battelle Screening Harter Teacher SSRS Literacy Sentence Repetition Post	Battelle Screening Parent SSRS Teacher SSRS Post	Parent SSRS Teacher SSRS Teacher Survey Post	Parent SSRS Teacher SSRS Teacher Survey Post
Cohort 2 (1991-1992 Preschoolers)	Battelle Screening Harter Teacher SSRS Post	Battelle Screening Harter Teacher SSRS Literacy Sentence Repetition Post	Full Battelle Parent SSRS Teacher SSRS Post	Parent SSRS Teacher SSRS Teacher Survey Post	Parent SSRS Teacher SSRS Teacher Survey Post
Cohort 3 (1992-1993 Preschoolers)		Battelle Screening Harter Teacher SSRS Literacy Sentence Repetition Post	Battelle Screening Parent SSRS Teacher SSRS Literacy Post	Parent SSRS Teacher SSRS Teacher Survey Post	Parent SSRS Teacher SSRS Teacher Survey Post
Cohort 4 (1993-1994 Preschoolers)			Battelle Parent SSRS Teacher SSRS Literacy Pre and Post	Parent SSRS Teacher SSRS Teacher Survey BASC-TRS Post	Parent SSRS Teacher SSRS Teacher Survey Post
Cohort 5 (1994-1995 Preschoolers)				Battelle Teacher SSRS Parent SSRS Parent Survey Literacy Pre and Post	Parent SSRS Teacher SSRS Teacher Survey Post
Cohort 6 (1995-1996 Preschoolers)					Battelle Parent Survey Parent SSRS Teacher SSRS Literacy Pre and Post

Evaluation Question 1

1. What is the nature and extent of implementation of the Kentucky Preschool Program in Kentucky?

Sampling Strategy

In order to obtain a stratified random sample of preschool programs, we identified the eight Service Center Regions of Kentucky. Within each of those eight regions, we divided the districts into two groups, those with district only provided programs and those with blended programs. All regions are comprised of several school districts, with the exception of Jefferson County, which is the only school district in Region 3. There were 108 blended and 55 district only programs from which classrooms were randomly selected. Twenty-four classrooms were selected from 22 randomly selected school districts.

Methodology

Preschool Coordinators were contacted by the Kentucky Preschool Evaluation office. Two days were scheduled to visit each program. Appointments to observe in the classrooms, and interview teachers, Family Resource Center Coordinators, and Preschool Coordinators were made. Family Resource Coordinators are located in the Family Resource Centers. Family Resource Centers were mandated in section 18 of House Bill #940 of the Kentucky Education Reform Act. Family Resource Centers are to be located in or near each elementary school in which 20% or more of the student body are eligible for free school meals. Family Resource Centers are to promote the identification and coordination of existing resources that include but not are limited to:

- Full-time preschool care for 2 and 3 year olds
- After school child care for children 4 through 12 years old
- Full-time child care for children ages 4 through 12 years old during the summer and on other days when school is not in session
- Families in training (an integrated approach to home visits, group meetings, and monitoring of child development for new and expectant parents)
- PACE (Parent and Child Education as described in KRS 158.360)
- Support and training for child care providers

- Health services, referral to health services, or both.

After appointments were made, a list of documentation materials (Appendix 1) was sent to each classroom teacher. Data collectors observed each classroom and completed the Early Childhood Environment Rating Scale and sections A and B of the Configuration Map for Preschool Programs. Interviews and written materials were used to complete sections C, D, E, and F of the Configuration Map for Preschool Programs. Three parents from each classroom were randomly selected. Each of the randomly selected parents were called and asked a series of interview questions while the data collectors were on-site. Additionally, a Parent Survey (Appendix 1) was sent to parents whose children attended the selected 24 sites. The classroom teachers were asked to send the surveys home with the children. Each survey included a stamped, pre-addressed envelope in which the parents could return the survey directly to the project office.

Instrumentation

The Configuration Map for Preschool Programs was developed by the Kentucky Institute of Educational Research for the purpose of studying the implementation of the Kentucky Preschool Program. The Configuration Map for Preschool Programs consists of 23 questions which describe the variations in practice of components of the preschool programs. Approximately one day was needed to complete the Configuration Map for Preschool Programs.

Questions related to the Configuration Map Questionnaire which were developed by the research team in the 1994-1995 evaluation year for classroom teachers, Family Resource Center Coordinators, Preschool Coordinators, and parents were used in the 1995-96 evaluation. (Appendix 1). In addition the Early Childhood Environment Rating Scale (Harms & Clifford, 1980) was completed in each classroom. (Appendix 1). The Early Childhood Environment Rating Scale (ECERS) involves structured observation and evaluation of the early childhood classroom in seven major areas: Personal Care, Furnishings, Language/Reasoning, Fine/Gross Motor, Creative, Social Development, and Adults. Approximately three to four hours were needed to administer the ECERS.

Parent Survey

During the 1992-93 evaluation, a questionnaire was developed as a means of measuring parent satisfaction with the Kentucky Preschool Programs. In addition, the questionnaire included items related to the types of activities the preschool programs offered to parents, the types of activities the parents chose to attend and the barriers that prevented parents from being involved in activities. During the 1994-95 evaluation, the research team expanded the questionnaire to obtain more information from parents on the quality of the preschool programs. The 1994-95 version of the questionnaire included the same questions on parent involvement activities and barriers to parent involvement as the original survey but the section on parent satisfaction was expanded. The additional questions addressed issues such as parent involvement in decision making related to their child's education, the extent to which parents felt that their opinions were valued by the school and whether or not parents felt comfortable going to the school or talking with personnel at the school. The expanded version of the questionnaire reflects an attempt to assess parent satisfaction with the overall program including the effects of the program on the child as well as the effects of the program on the family. The expanded version was used in the 1995-96 evaluation.

Data Collection Team

Data at the 24 sites were collected by three researchers, two of whom hold master's degrees in early childhood education, and one who is currently a master's student in early childhood education. All three have had experience teaching and supervising in early childhood programs. The data collection team was trained by project faculty. After training was completed, the data collectors independently completed the Early Childhood Environment Rating Scale in early childhood classrooms until they reached an inter-rater reliability of 90%.

Data Analysis

In order to summarize the Configuration Map scores, the following numerical values were assigned to each indicator:

A = 5

B = 4

C = 3

D = 2
E = 1

It should be noted that A (5) is the fullest level of implementation and E (1) is the lowest level of implementation. However, B (4), C (3), and D (2) are not necessarily in rank order, and we recognize that the Configuration Map for Preschool Programs is not an ordinal scale. However, for ease of reporting results, this strategy was chosen.

The ECERS is an ordinal scale in which 1 is the lowest score, 7 is the highest score and 2-6 are in rank order.

Results

The results of the ECERS observations in the preschool classrooms are presented in Table 2 which displays the means for all of the classrooms observed in the 1991-92, 1993-94, and 1995-96 academic years. Possible scores on the Early Childhood Environment Rating Scale range from 1 to 7 with 1 as inadequate, 3 as minimal, 5 as good, and 7 as excellent.

Overall the scores for the 24 classrooms in 1995-1996 were at or above average in all areas except Space Alone. The individual classrooms ranged in quality from a mean score of 2.77 across all items which is approaching minimal quality, to a mean score of 5.80 across all items. While the majority of scores improved from 1991-92 to 1993-94, this was not evident in 1995-96. However, the 1995-96 scores were higher than the scores recorded in the 1991-92 evaluation in most cases. While some of the same classrooms were scored in 1991-92 and 1993-94, an additional 30 sites were added in 1993-94. The 24 sites scored in 1995-96 were a new sample. These data suggest that program quality appears to be fairly constant across individual preschool programs across the state of Kentucky.

Table 2
Means for ECERS Items, Sub-Scores and Total Score

	1991-92 (N=35 Sites) M	1993-94 (N=65 Sites) M	1995-96 (N=24 Sites) M
Greeting	4.7	4.7	4.8
Meals	3.9	4.7	4.3
Toileting	4.4	4.7	5.0
Personal Grooming	3.8	4.4	3.8
Total Personal Care	**4.2**	**4.6**	**4.5**
Furnishings (Routine)	5.5	6.5	5.9
Furnishings (Learning)	4.5	4.9	4.9
Furnishings (Relax)	4.6	5.4	5.1
Room Arrangement	4.8	5.2	5.4
Child Display	3.8	4.1	3.8
Total Furnishings/Display	**4.6**	**5.2**	**5.0**
Understanding Language	5.2	5.7	5.1
Using Language	5.3	5.5	5.5
Reasoning	4.8	5.0	4.8
Informal Language	4.8	5.3	4.8
Total Language / Reasoning	**5.0**	**5.4**	**5.0**
Fine Motor	5.0	5.9	5.4
Supervision (Fine Motor)	4.9	5.1	4.3
Gross Motor (Space)	4.3	4.5	4.4
Gross Motor Equipment	3.8	4.1	3.5
Gross Motor Time	5.0	5.4	4.7
Supervision (Gross Motor)	5.2	5.4	4.3
Total Fine/Gross Motor	**4.7**	**5.1**	**4.4**
Art	3.9	5.3	4.0
Music / Movement	4.8	5.0	5.5
Blocks	4.5	4.9	4.2
Sand/Water	4.0	4.6	4.6
Dramatic Play	3.7	4.2	3.6
Schedule (Creative)	4.6	5.8	5.1
Supervision (Creative)	5.3	6.0	5.4
Total Creative	**4.4**	**5.1**	**4.6**
Space (Alone)	3.6	3.2	3.1
Free Play	4.5	5.7	4.6
Group Time	4.1	5.3	5.2
Cultural Awareness	2.5	3.2	3.7
Tone	5.3	5.4	4.8
Exceptional Provisions		4.5	5.8

Continued

	1991-92 (N=35 Sites) M	1993-94 (N=65 Sites) M	1995-96 (N=24 Sites) M
Total Social Development	4.0	4.6	4.5
Adult Personal Area	3.9	5.3	5.3
Adult Opportunity	4.3	6.0	5.9
Adult Meeting Area	4.0	5.0	6.0
Parent Provisions	4.8	5.5	5.6
Total Adults	4.3	5.5	5.7
Total ECERS	4.5	5.1	4.8

Table 3 summarizes the results of the Configuration Map for Preschool Programs. From 1994-95 to 1995-96, implementation indicators moved in a positive direction in all areas except 5 items: (1) Effective adult and child interactions, (2) Individualization based on background of children which remained the same, (3) Sensitivity to family and cultural issues, (4) Program improvement, and (5) Transition, which moved in a negative direction, although they are still in the B and C range.

Table 3
Means for Configuration Map for Preschool Programs

	1994-95 (N=8 Sites) M	1995-96 (N=24 Sites) M
Learning Centers	4.2	4.3
Organization of materials	3.9	4.3
Consistent daily routine	3.6	4.1
Effective adult and child interaction	4.1	4.1
Total Learning Environment	**4.0**	**4.2**
Engagement of children in learning experience	3.6	4.2
Individualization based on background of children	3.5	3.5
Individualization based on characteristics of children	3.3	3.7
Process-oriented activities	3.4	3.6
Focus on all aspects of development	3.3	3.8
Total Utilizing Developmentally Appropriate Practices	**3.4**	**3.8**
Parent input	3.3	3.7
Strategies for involving families	3.6	3.9
Sensitivity to family and cultural issues	3.8	3.4
Self-sufficiency (focus on activities)	3.4	3.8
Total Promoting Families	**3.5**	**3.7**
Continuous progress	3.0	3.5
Planning (use of assessment)	3.1	3.5
Reporting to parents	3.8	3.9
Program improvement	3.4	3.2
Total Assessment	**3.3**	**3.5**
Governance	3.1	3.8
Recruitment	3.4	4.3
Nutrition	3.3	4.2
Health	3.3	4.5
Child care and family needs	2.1	3.3
Transition	3.3	2.8
Total Coordinating Resources	**3.2**	**3.8**
Total Professional Growth	**3.4**	**4.3**
Total Mean of Configuration Map	**3.4**	**3.8**

The correlation between the Early Childhood Environment Rating Scale and the Configuration Map for Preschool Programs is high and significant ($r = .88$, $p < .05$). This indicates that the programs that are scoring high on the ECERS, which is an in-depth classroom evaluation, are also scoring high on the Configuration Map for Preschool Programs which is an instrument that is more broad, covering items such as promoting families, assessment, and coordination of resources.

We found that the interviews of the Preschool Coordinators, Family Resource Coordinators, and teachers were very helpful in collecting information to complete the Configuration Map for Preschool Programs. The written materials that were reviewed were helpful in that they documented information from interviews and expanded upon program information. Data collectors found that the information received from parents was difficult to obtain. It was difficult to reach parents by phone. When parents were reached, the information obtained was not detailed enough to contribute to completing the instrument.

Parent Survey Results

The parent surveys that were sent home to parents provided more specific information than what was obtained through the phone interviews. A total of 322 Parent Surveys were mailed to teachers to distribute, and 125 surveys were returned by parents. This reflects a 43% return rate. Table 4 provides a summary of the parents who completed the survey. The majority of the surveys were completed by mothers (92%).

Table 4
Type of Respondent for Parent Surveys

	N	%
Father	3	2.4
Mother	115	92.0
Other	2	1.6
Guardian	2	1.6
Missing	3	2.4
Total	125	100.0

Table 5 includes information on the types of activities that parents reported the school offered to them and the types of activities in which the parents chose to participate for children in 1994-95 and 1995-96 studies. The most common activities offered to parents were helping in the child's class, home activities, home visits, parent meetings, conferences with teachers, newsletters, attending field trips, and phone calls with the teacher. Over 70% of the parents indicated that each of these activities was offered to them. Of the remaining activities, at least one fourth of the parents responded that each activity was offered.

Table 5
Number and Percentage of Parents Who Were Offered Activities by the School and the Number and Percentage of Parents who Indicated They Had Participated in the Activities in 94-95* and 95-96.**

School Offered Activities	Activities Offered by the School				Activities in which Parents Participated			
	N		%		N		%	
	1994-95	1995-96	1994-95	1995-96	1994-95	1995-96	1994-95	1995-96
Help in the classroom	352	116	91.0	92.8	142	57	36.7	45.6
Home activities	329	115	85.0	92.0	299	98	77.3	78.4
Home visit	351	112	90.7	89.6	286	84	73.9	67.2
Parent meeting	351	111	90.7	88.8	240	72	62.0	57.6
Conferences with teacher	352	110	91.0	88.0	286	92	73.9	73.6
Parent newsletters	342	106	88.4	84.8	94	21	24.3	16.8
Attend field trips	320	99	82.7	79.2	180	56	46.5	44.8
Phone calls with teacher	267	93	69.0	74.4	213	74	55.0	59.2
School committees	252	65	65.1	52.0	46	11	11.9	8.8
Site Based Decision Making Council	159	35	41.1	28.0	26	7	6.7	5.6
Admissions Release Committee meeting	172	34	44.4	27.0	56	11	14.5	8.8
Teacher-Parent notebook	129	33	33.3	26.4	67	24	17.3	19.2

*Information were collected from 387 parents. (1994-95)
**Information were collected from 125 parents.(1995-96)

In terms of activities in which the 1995-96 parents chose to be involved, the most common activities were home activities, conferences with teachers, home visits, phone calls with the teacher, and parent meetings. More than 50% of all respondents indicated that they had participated in these activities. About 90% of the parents indicated that home visits were offered to them and 67% indicated that they had participated in home visits. These numbers are similar to the data from the 1994-95 Parent Survey, with 91% of the parents reporting being offered home visits and 74% participating. While parents are being offered the home visit, the number of parents who report participating dropped slightly from 74% to 67%.

Again this year, parents report the most frequently offered activity is helping in the classroom (92.8% in 1995-96 and 91.0% in 1994-95). About 46% of the parents who returned the survey chose this activity, an increase of 9% in 1994-95 study. Parents were also asked to indicate what factors prevented them from participating in the activities that were offered by their child's program. Table 6 provides a summary of these data. About 75% of the parents indicated that schedule conflicts were a barrier at least sometimes, with 46% of the parents reporting that schedule conflicts are frequently a barrier to their participation. About 34% of parents report that child care is, at least sometimes, a barrier to participation and transportation is sometimes or frequently a barrier (28%). These figures, particularly those related to scheduling, suggest that the preschool programs may need to work more closely with parents to identify activities and scheduling of those activities.

Table 6
The Extent to Which the Following Factors Prevented Parents From Being Involved in the Activities Offered by School (1995-96)

	Frequently		Sometimes		Not at All		M*
	N	%	N	%	N	%	
Child care	17	13.60	26	20.80	67	53.60	1.8
Transportation	14	11.20	21	16.80	69	55.20	1.45
Schedule conflicts	58	46.40	36	28.80	20	16.00	2.29

N=102.
**1=not at all, 2=sometimes, 3=frequently.*

Parents were asked to complete 13 additional items related to their satisfaction with the Kentucky Preschool Program. Parents rated each item on a five point Likert scale from strongly agree to strongly disagree. Table 7 presents the data representing parents' responses to these 13 items. In general, parents appeared satisfied with all aspects of the programs. Over 90% of the parents indicated that:

- the Kentucky Preschool Program was helpful to their child,
- they were pleased with the preschool program,
- the staff offered the parent sufficient opportunities to be involved,
- the teacher knows their child's needs and interests,
- the parent knows someone at school with whom they can talk when their child has a problem,
- the parent feels comfortable going to school to talk about their child's progress of problems,
- the school helps their child learn to solve problems and make decisions
- the teacher keeps the parent informed of their child's progress.

Over 90% of the parents indicated that they either agreed or strongly agreed with 8 of the 13 questions.

Table 7
Percent of Parents' Response to Survey

	Strong Agree	Agree	Undecided	Disagree	Strong Disagree	M* (SD)
The Kentucky Preschool Program was helpful to my child	63.2	28.0	6.4	.8	0.0	4.56 (.65)
The Kentucky Preschool Program was helpful to my family	36.0	42.4	16.0	1.6	.83	4.15 (.81)
I am pleased with the Kentucky Preschool Program	56.0	35.2	5.6	1.6	0.0	4.48 (.68)
The staff of my child's Kentucky Preschool Program offered me sufficient opportunities to be involved	60.8	32.8	4.0	.8	0.0	4.56 (.62)
The teacher(s) know my child's needs and interests	68.8	26.4	3.2	0.0	0.0	4.67 (.54)
I help plan and evaluate my child's educational progress with the teacher(s)	33.6	43.2	17.6	3.2	0.0	4.10 (.81)
When my child has a problem, I know someone at school with whom I can talk	58.4	32.8	4.8	1.6	0.0	4.52 (.67)
My child likes the Kentucky Preschool Program	64.8	24.0	8.0	.8	0.0	4.57 (.68)
I feel comfortable going to school to talk about my child's progress or problems	69.6	24.0	4.0	.8	0.0	4.65 (.60)
I am involved in my child's preschool program	36.0	50.4	7.2	4.0	0.0	4.21 (.75)
My opinions are valued by the school	36.8	39.2	17.6	3.2	0.0	4.13 (.83)
The school helps my child learn to solve problems and make decisions	55.2	36.8	4.0	1.6	.8	4.46 (.73)
The teacher(s) keep me informed of my child's progress in school	67.2	26.4	4.0	.8	0.0	4.63 (.61)

N=120.
*Strongly agree=5, Agree=4, Undecided=3, Disagree=2, Strongly Disagree=1.

In response to a specific request from the Early Childhood Advisory Council, the following questions were the focus of this year's evaluation. The 20 teacher, 15 Family Resource Coordinator, and 18 Preschool Coordinator interviews provided additional information about program implementation of the Kentucky Preschool Program goals.

Results of Configuration Map Item C3 - Sensitivity to Family and Cultural Issues.
Teachers and parents reported that information about family values, priorities for children in the classroom, and sensitivity to family and cultural issues is gathered most frequently through home visits, parent surveys, and parent conferences. Other avenues used less frequently are family meetings, informal contact, Head Start Family Needs Assessment (used due to blending as well as adoption of available useful forms, regardless of blending), and asking the children.

According to the interviews, teachers address identified values and cultural issues in their classrooms in a variety of ways. The most frequently given answer was through literature (N=15). Other curriculum strategies where teachers addressed these issues were: circle time (N=4), introduction of a variety of foods (N=3), the use of multicultural videos (N=3), the use of multicultural equipment (dolls, etc.) (N=2), classroom visitors (N=1), and field trips (N=1). Three teachers reported that they show sensitivity to differences in the curriculum, and two used situations that arise in the classroom to meet children's needs. Two teachers reported that they just use common sense, and one teacher reported that there are no problems in providing for identified values and cultural issues in her classroom.

Results of Configuration Map Item C4 - Self-Sufficiency.
In helping families to achieve self sufficiency teachers most often refer parents to GED programs (N=12). Teachers also call upon Family Resource Centers to help match parent needs with available programs (N=7). One teacher reported that the preschool coordinator handles this part of the program. Additional avenues used by teachers to encourage parents to participate in adult education, training programs, and family literacy programs are parent meetings (N=3), parent workshops (N=3), and providing resource lists of programs available (N=1). Teachers reported that adult education opportunities are integrated in their program through referrals to the Family Resource Center (N=7),

GED programs (N=4), Community Colleges (N=1), PACE (N=1), and Even Start (N=1). Three teachers reported that they are not involved with this part of the program.

Results of Configuration Map Item E1 - Governance

Teachers report that the Preschool Coordinators (N=7), Central office (N=6), and the Head Start Policy Council (N=5) (due to blending of programs) make the decisions related to the governance of the preschool program. Three teachers reported that parents are involved in minor decisions related to the program. Two teachers reported that parents are not involved at all in the governance of the program. All parents reported that they are not involved in the decision making process and that the school and teachers make those decisions.

Teachers are involved in decision making through teacher questionnaires (N=2) and teacher meetings (N=2). Additional materials gathered to use in decision making are community needs assessments (N=2), Preschool Interagency Policy Council (N=1), PTO's or PTA's (N=2), and special boards (N=1). There was no written documentation provided that demonstrated how teachers, parents, or the community are involved in decision making.

Results of Configuration Map Item E3 - Nutrition

Family Resource Center Coordinators and Preschool Coordinators reported that they work with and/or make referrals to the following agencies most frequently to meet the nutritional needs of the families with whom they work:

- Health Department
- Women, Infants, & Children
- Food Stamps
- County Extension
- Department of Social Services

Results of Configuration Map Item E4 - Health

When asked what related health screening children received, Family Resource Coordinators and Preschool Coordinators reported that they provide the following screenings:

- Vision
- Hearing
- Dental
- Physicals
- Speech and Language

Family Resource Coordinators and Preschool Coordinators collaborate with a variety of agencies to conduct the screening:

- Health Departments
- Local Physicians
- Local Hospitals
- Family Resource Center Nurses
- Community Health Fairs

Based on screening results, Family Resource Center Coordinators and Preschool Coordinators report that they work with the following people or agencies to provide follow-up treatment:

- Local Health Departments
- Local Practitioners
- Lions Club
- Charities (Churches)
- Comprehensive Care

Results of Configuration Map Item E5 - Child Care and Family Needs

Five teachers reported that they have no contact with local child care providers to provide comprehensive services for children, and two reported limited contact in this area. Three teachers reported they have full day programs and three teachers work with an after-school program located at the school. Teachers who do work with other providers help ensure a smooth transition through phone calls (N=6), providing transportation (N=5), and exchanging notes (N=4).

Family Resource Center Coordinators report that they work with local child care providers by providing training (N=6), sponsoring Day Care Celebration Day (N=2), and

distributing a quarterly newsletter (N=1). One Family Resource Coordinator sponsors a full day program and two sponsor after-school programs at the school. One Family Resource Center Coordinator reports that they provide transportation to local child care centers and one refers parents to local child care centers. Five Family Resource Center Coordinators report they have no working relationship with local child care providers and three report that there is not much contact to ensure a smooth transition between programs.

Seven Preschool Coordinators report that they work with local child care centers by providing transportation. The way in which they work to smooth the transition is through phone calls (N=3), Preschool Interagency Planning Councils (N=2), and joint programming (N=1). Other Preschool Coordinators report that they do not work with local child care centers because there are no providers in town (N=3), and two report a limited need for child care by their families. Two Preschool Coordinators are working with the Family Resource Center to start a child care program and two work with existing full or extended day programs in the school.

Evaluation Question 2

2. What developmental gains were achieved by 1995-96 participants in Kentucky Preschool Programs in the following areas:

   a. Developmental Skills

   b. Social Skills Related to School Success

   c. Early Literacy Skills

Methodology For Question 2

During the 1995-96 evaluation, a battery of tests was administered in the fall (pretest) and spring (posttest) to Cohort 6 (1995-96 preschoolers). Table 8 provides an overview of the children in Cohort 6.

Table 8
Number of Children Sampled, Pre-Tested, Post-Tested, and With Completed Records

	Children Sampled	Children Pre-tested	Children Post-tested	Completed Records
Cohort 6 Preschool	345	334	296	291

These numbers include three groups of children with disabilities who were tested during the 1995-96 evaluation. This included 26 children identified as developmentally delayed, 62 children identified with speech and language delays, and 5 children with severe disabilities. Children are labeled as developmentally delayed if they are significantly delayed in one developmental domain or delayed in two or more domains. Children are labeled as severely delayed if they have one of several labels identified under IDEA (e.g., Deaf-Blind). Children with speech/language delays are those children who have identified speech and language delays but who are developing typically in all other developmental domains. Adaptations were made in the administration of the Battelle Developmental Inventory according to the instructions provided in the manual.

Developmental Skills Measures

The Battelle Developmental Inventory (BDI) was administered to Cohort 6. The BDI is a standardized, individually administered assessment battery of key development skills for children from birth to eight years. It is primarily designed for use by infant, preschool, and primary teachers as well as by special educators. The full BDI consists of 341 test items grouped into the following five domains:

- Personal-Social
- Adaptive
- Motor (Fine and Gross)
- Communication (Receptive and Expressive)
- Cognitive

Personal Social

This domain consists of 85 items that assess abilities and characteristics that allow children to engage in meaningful social interactions. The items measure six specific areas of personal-social development: adult interaction, expression of feelings and affect, self-concept, peer interaction, coping, and social roles.

Adaptive

The adaptive domain consists of 59 items that measure the child's ability to make use of the information and skills that are assessed in the other domains. The adaptive domain addresses two general categories of skills: self-help and task-related skills. These skills include attention, eating, dressing, personal responsibility, and toileting.

Motor Domain

The motor domain includes 82 items that assesses the child's ability to control both large (gross motor) and small (fine motor) muscles of the body. The behaviors or skills measured within fine and gross motor are grouped in five sub-domains: muscle control, body coordination, locomotion, fine muscle, and perceptual motor.

Communication Domain

The communication domain includes 59 items measuring both receptive and expressive communication skills. In addition, the items in the receptive communication sub-

domain can be divided into two subgroups: discrimination and meaning. The items in the expressive communication sub-domain can be grouped as follows: sounds, grammar-rules, and meaning-usage.

Cognitive Domain

The cognitive domain includes 56 items that are grouped into four sub-domains: perceptual discrimination, memory, reasoning and academic skills, and conceptual development. Perceptual discrimination skills range from infants' sensorimotor skills to children's ability to discriminate the featured objects and to selectively respond to them. Memory items measure the child's ability to retrieve information when given relevant cues to do so. Reasoning and academic items measure children's critical thinking skills as well as scholastic abilities (e.g., reading, writing, spelling) that are necessary for achievement in school. Finally, conceptual development items measure the child's ability to understand concepts and to draw relationships among objects.

Administration procedures include direct testing, interviews with caregivers and observations of the child in the classroom. Administration time for the full BDI is approximately one to one and one half hours. The BDI has adaptations for children with disabilities such as visual, motor, speech, and multiple disabilities.

During August 1995, 12 testers were trained to administer the Battelle Developmental Inventory and the informal literacy measures. Each tester participated in twelve hours of training and then practiced administering the instruments to four-year-old children during a two week period following the training. In order to ensure that standardized procedures were followed, each tester was simultaneously observed by two project trainers. Before beginning to test children in the sample, testers demonstrated a 90% or higher reliability during a reliability check and passed a competency checklist with 90% or better reliability that included administration, child rapport, and interaction skills. During field testing, observations were conducted to determine inter-rater reliability. These observations revealed a 98% inter-rater agreement rating between tester and trainer during pre-testing (Range=95% to 100%) and 97% during post-testing (Range=95% to 99%).
In February 1996, all testers again were observed and inter-rater reliability was established using the same procedure. There were weekly accuracy checks on completed test records.

Each protocol was checked thoroughly for completeness and errors. Discrepancies were reviewed by project staff and testers, and any necessary corrections were made. Based on these reviews, the overall weekly accuracy of protocols during pre-testing was 98% (Range=92% to 100%) and during post-testing was 96% (Range=82% to 100%).

Early Literacy Measures

Two additional informal instruments designed to measure children's knowledge of written language were administered to children. These were adaptations of the Letter Identification and Concepts About Print Test in Marie Clay's (1992) diagnostic survey in The Early Detection of Reading Difficulties. The Letter Recognition Test involves asking the children to (1) recognize and write their full names, and (2) recognize and write the upper and lower case letters of the alphabet. The Book Handling Knowledge Test involves asking the children to point out many aspects of a book such as letters and words, left-to-right, front and back of book, and the title and author of the book. Each of the literacy measures requires 10 to 15 minutes to administer.

Social Skills, Problem Behavior, and Academic Competence Measures

The Social Skills Rating System (Gresham & Elliott, 1990) was completed by parents and teachers to assess the impact of the program on the social development of children who had participated in Kentucky Preschool Programs. The Teacher Questionnaire asks teachers to compare children to their classmates and to rate them in the areas of Social Skills and Problem Behaviors. At the primary level, teachers are also asked to rate students' Academic Competence. The Parent Questionnaire assesses parents' perceptions of their child's Social Skills and Problem Behaviors.

Program evaluation results that address evaluation question 2 are reported in three separate sections detailing gains in developmental skills, social skills, and early literacy skills. Within each section the gains for groups of children are examined. Findings in the area of developmental skills are discussed in terms of actual measured gains and also in terms of projected gains for the school year.

Developmental Skills

In this section, the developmental outcomes of children who participated in Kentucky Preschool Programs are discussed. To determine developmental gains, children's pre- and posttest raw scores obtained with the Battelle Developmental Inventory (BDI) were converted to age equivalent scores. Developmental gains expressed in months for each child were derived from the differences between their pre- and posttest age equivalent scores. The results represent developmental outcomes for preschool program participants during the period of the evaluation study. To determine what the developmental progress of participants would be for the entire school year, projected developmental gains were calculated based on the rate of gain per month observed during the time between pretest and posttest measurements.

Pretest/Posttest Developmental Gains of Economically At-Risk Preschoolers

The pre-/posttest developmental gains of economically at-risk preschool children are reported for each domain of the BDI in Table 9. The mean chronological age at pretest was 53.47 months or about 4 years, 5 months. The demonstrated age equivalent scores as measured with the BDI ranged from a low of 3 years, 8 months in the subdomain of Receptive Communication to a high of 4 years, 4 months in the Personal-Social area. At postest, the mean chronological age was 59.35 months or about 4 years, 11 months. The age equivalent scores ranged from a low of 4 years, 1 month on the Receptive Communication subdomain to a high of 5 years, 0 months on the Personal Social domain.

Table 9
Mean Developmental Age Equivalents on the Battelle Developmental Inventory Domains at Pre- and Posttest, and Developmental Gains of Economically At-Risk Kentucky Preschoolers for 1995-96

Battelle Domains	Pretest		Posttest		Developmental Gains	
	M	SD	M	SD	M	SD
Personal-Social	52.15	10.32	60.48	10.02	8.37	11.05
Adaptive	51.25	8.92	58.27	9.18	7.02	8.74
Motor Total						
Gross Motor	50.15	12.44	58.76	10.60	8.62	11.61
Fine Motor	44.60	5.95	50.49	6.62	5.89	6.40
Communication. Total						
Receptive	44.44	8.26	48.78	7.89	4.34	8.23
Expressive	48.38	6.94	51.64	5.79	3.25	5.55
Cognitive	44.77	6.23	49.51	6.56	4.73	5.94
Total Development	**49.52**	**6.18**	**55.45**	**5.21**	**5.93**	**4.36**

N=177.
The average time between pre- and posttest = 5.95 months.

The overall results showed that, as a group, the Kentucky Preschool Program participants who were economically at-risk made developmental gains in all areas as reflected in the average difference between their pretest and posttest age-equivalent scores. Developmental gains in age equivalents ranged from a low of 3.25 months in the Expressive Communication domain to a high of 8.33 and 8.62 months on the Personal-Social and Gross Motor domains, respectively. The average gain based on the BDI total developmental score was 5.93 months. The increase in the total score represents gains demonstrated during the interval between pretest and posttest, which averaged 5.97 months.

Projected Year-Long Developmental Gains of Economically At-Risk Preschoolers

The rates of developmental gain are expressed in terms of a Program Efficiency Index (PEI), using a method developed to assess the efficiency of early intervention programs (Bagnato & Neisworth, 1980). According to this method, a program efficiency index was calculated by dividing the developmental gain in months from pretest to posttest and dividing it by the number of months between the pre- and posttesting. These results represent preschool program outcomes based on the actual time that children participated in the program during the pretest and posttest interval. The PEI is derived from the formula illustrated below:

$$\text{Program Efficiency Index} = \frac{\text{Posttest Developmental Age Equivalent - Pretest Developmental Age Equivalent}}{\text{Posttest Date - Pretest Date}}$$

PEIs were calculated first for each child and then summarized into mean PEIs for each of the three samples of children across all domains. Mean PEI results for economically at-risk Kentucky preschoolers are included in Table 10. PEI ratios at or near 1.00 reflect an average of one month gain in developmental age-equivalent scores for each month in the Kentucky Preschool Program and could be considered average or expected gain. Ratios greater than or less than 1.00 would suggest developmental gains that are either above or below the rate assumed to be average development.

Finally, projected developmental gains for the entire school year were calculated. These projected gains were derived by multiplying the PEIs (monthly rates of development

between pretest and posttest) by 8.75 months (175 school days is the length of the Preschool year). PEI's were also calculated using actual days present rather than the actual number of school days between pre and post testing. The results are included in Table 10.

Table 10
Program Efficiency Index (PEI) and Projected School Year Developmental Gains of Economically At-Risk Kentucky Preschoolers for 1995-96

Battelle Domains	PEI (Gain Per Month)		Projected Gain (PEI x 8.75 months)		PEI (Gains / Present Months)	
	M	SD	M	SD	M	SD
Personal-Social	1.42	1.87	12.41	16.40	2.02	2.74
Adaptive	1.18	1.48	10.32	12.97	1.66	2.29
Motor						
Gross Motor	1.46	1.96	12.75	17.14	2.00	2.85
Fine Motor	1.00	1.08	8.75	9.46	1.34	1.45
Communication						
Receptive	.73	1.34	6.35	11.75	1.02	2.01
Expressive	.56	.95	4.87	8.33	.75	1.29
Cognitive	.79	1.03	6.93	8.98	1.13	1.56
Total Development	**1.00**	**.73**	**8.77**	**6.39**	**1.41**	**1.12**

N=177.
The time children were present at school = 4.41 months.

All PEI's indicate substantial rates of positive gains per month. The PEI for the total overall development (M=1.00) indicates one month of developmental gain for each month in the program. This rate of developmental progress is notable given that the low socioeconomic status of these children often contributes to lower rates of development. Adjusting for the length of the pre- and posttest interval, the highest rates of development appeared in the Personal-Social (M=1.42), Gross Motor (M=1.46), and Adaptive

(M=1.18) domains. Gross Motor and Personal-Social skills showed the highest rate of gain approaching one and a half months of development per month in program. Children evidenced their slowest rate of developmental gain in the Expressive sub-domain (M=.56).

Based on these rates, the average developmental gains projected for the entire school year (8.75 months) ranged from a low of 4.87 months in the area of Expressive Communication to a high of 12.75 months in the area of Gross Motor Skills. As reflected in their Total Development Score, Kentucky Preschool participants can be expected to achieve approximately nine months of developmental gain during the 8.75 months of the full school year.

Although use of this program evaluation methodology is intended to communicate more easily the relationship of developmental progress with time spent in the program, it should be noted that normal child development is a complex process that is difficult to precisely measure and does not progress in equally prescribed monthly intervals. Also, it should be mentioned that because these children are from low socioeconomic backgrounds their rate of developmental progress when initially entering Kentucky Preschool Programs may vary considerably from expected norms. Therefore the gains demonstrated by these children suggest an overall positive benefit for program participants.

The last column on Table 10 represents a PEI score using the actual attendance in place of actual time of the children between pre and post-testing (M=4.41 months). When PEI's are figured in this manner, all BDI domain scores increase with children making the highest gain in the Personal Social Domain. The PEI for the total BDI score increases from 1.00 months to 1.41 months of gain during the program intervention (4.41 months).

Proportional Change Index for Economically At-Risk Preschoolers

In order to compare the rate of developmental gains before the program and the rate of developmental gains after participation in the preschool program, a proportional change index analysis was conducted. The Proportional Change Index (PCI) is an alternative to the PEI in that it compares the change in children's development before and after an early intervention program (Wolery, 1983). The PCI is a ratio calculated by dividing the rate of change during the program by the rate of change before the program. The rate of change

during the program is the product of dividing the developmental gain (posttest age equivalent minus pretest age equivalent) by the number of days or months in between the pretest and posttest. The following formula illustrates the method of computation:

$$PCI = \frac{\text{(Developmental Gain) / (Time in Intervention)}}{\text{(Developmental Age Equivalent at Pretest) / (Chronological Age at Pretest)}}$$

The PCI allows straightforward interpretation of results. If the PCI is greater that 1, then the child's rate of development during the program is greater than the rate of development before the program. If a child's rate of development before the program is greater than the rate during the program then the PCI will be less than 1. A PCI equal or near to 1 indicates that the rates of development before and during the program are similar. If programs are designed to assist children who are developmentally behind, the program should result in a greater rate of gain during the program than was observed prior to entry into the program. The PCI differs from the PEI (defined earlier) in that the PCI takes into consideration the child's developmental rate prior to entry into the program where as the PEI does not. Thus, the PCI provides information on whether the child's rate of development is increased as a result of the program. This is a critical measure, particularly for children with disabilities.

The PCI's for the at-risk children are presented in Table 11. Based on these data, the program had the greatest impact in the areas of personal-social, adaptive, gross motor, and fine motor. In each of these areas, the rate of gain during their participation in the program was greater than their rate of gain prior to entering the program. These data suggest that the programs positively affect the children's rate of developmental progress.

Table 11
Proprotional Change Index for At-Risk Preschool Children on the Battelle Developmental Inventory for 1995-96 Preschoolers

Battelle Domains	PCI	
	M	SD
Personal Social	1.77	2.44
Adaptive	1.43	1.93
Motor		
Gross Motor	1.66	2.31
Fine Motor	1.12	1.23
Communication		
Receptive	.84	1.56
Expressive	.65	1.13
Cognitive	.90	1.19
Total Development	**1.16**	**1.00**

N=177.

Developmental Gains of Preschoolers with Disabilities

Table 12 presents the Battelle data for the children with developmental delays. These children made developmental gains in each area of the Battelle. The mean chronological age for these children was 52.58 months at pretest and 58.85 months at posttest. These gains ranged from 2.81 months in expressive communication to 7.31 months in receptive communication. In addition, a gain of 5.85 months was observed in total development (a composite score of all domains) during the 6.27 months between pre- and post-testing for this group. The children made gains greater than the length of time in the program in the areas of adaptive and receptive communication

Table 12
Mean Developmental Age Equivalents on the Battelle Developmental Inventory at Pre- and Posttest, and Developmental Gains of Developmentally Delayed Kentucky Preschoolers for 1995-96

Battelle	Pretest		Posttest		Developmental Gains	
	M	SD	M	SD	M	SD
Personal-Social	45.31	10.24	51.23	8.91	5.92	8.64
Adaptive	43.27	8.84	49.81	11.57	6.54	11.35
Motor Total						
Gross Motor	42.77	12.90	48.88	14.54	6.12	9.67
Fine Motor	39.85	7.43	44.19	6.15	4.35	3.75
Communication Total						
Receptive	35.19	11.08	42.50	8.55	7.31	9.09
Expressive	43.23	9.67	46.04	10.46	2.81	6.44
Cognitive	38.35	8.24	44.19	7.04	5.85	5.12
Total Development	**42.38**	**7.11**	**48.23**	**7.58**	**5.85**	**4.73**

N=26.
The average time between pre and posttest = 6.27 months.
Chronological age at pretest = 52.58 months.
Chronological age at posttest = 58.85 months.

Data on the average gain per month are presented in Table 13. In adaptive and receptive communication, this group of children averaged more than one month gain per month in intervention. The projected school year developmental gains for the total BDI was 8.11 months for 8.75 months in the program. When the PEI was calculated using actual days present, the children made gains of more than one month per month in intervention in all domains except expressive communication.

Table 13
Program Efficiency Index and Projected School Year Developmental Gains of Developmentally Delayed Preschoolers for 1995-96

Battelle Domains	PEI (Gain Per Month)		Projected Gain (PEI x 8.75 months)		PEI (Gains / Present Months)	
	M	SD	M	SD	M	SD
Personal-Social	.92	1.36	8.05	11.94	1.35	1.96
Adaptive	1.03	1.78	9.04	15.56	1.54	2.65
Motor						
Gross Motor	.98	1.60	8.53	14.00	1.36	2.25
Fine Motor	.70	.62	6.11	5.39	1.01	.88
Communication						
Receptive	1.16	1.45	10.16	12.66	1.68	2.18
Expressive	.46	.99	4.00	8.63	.65	1.47
Cognitive	.94	.85	8.26	7.46	1.35	1.19
Total Development	**.93**	**.74**	**8.11**	**6.48**	**1.34**	**1.09**

N = 26.
The time children were present at school = 4.34 months.

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Table 14 presents the Battelle data for children with speech and language delay. This group of children made developmental gains in each area of the Battelle. The mean chronological age for these children was 51.85 months at pretest and 57.69 months at posttest. Gains ranged from 4.74 months in fine motor to 10.68 months in personal-social. In addition, a gain of 7.35 months was observed in total development (a composite score of all domains). The average length of time between pre- and post-testing was 5.84 months. In personal-social, adaptive, and gross motor, this group of children made gains that averaged more than one month per month in intervention.

Table 14
Mean Developmental Age Equivalent on the Battelle Developmental Inventory Domains at Pre- and Posttest, and Developmental Gains for 1995-96 Kentucky Preschoolers With Speech Delay

Battelle Domains	Pretest		Posttest		Developmental Gains	
	M	SD	M	SD	M	SD
Personal-Social	44.37	12.72	55.05	11.78	10.68	11.24
Adaptive	46.74	9.47	54.98	10.14	8.24	9.20
Motor total						
Gross Motor	42.69	13.26	50.77	13.58	8.08	14.41
Fine Motor	41.34	8.55	46.08	8.86	4.74	7.80
Communication total						
Receptive	37.90	9.10	43.29	9.59	5.39	8.20
Expressive	39.98	9.53	45.06	9.98	5.08	8.11
Cognitive	40.29	7.74	45.95	7.71	5.66	4.79
Total Development	**43.05**	**8.22**	**50.40**	**7.96**	**7.35**	**5.11**

N=62.
The average time between pre- and posttest = 5.84 months.
Chronological age at pretest = 51.85 months.
Chronological age at posttest = 57.69 months.

Table 15 provides an overview of the Program Efficiency Index for children with speech delays. These children appear to make the greatest gains in the areas of personal-social, adaptive, and gross motor. In all three of these areas, the children made greater gains per month in intervention than would be expected. That is, for each of these three areas, the children showed developmental gains of greater than one month per month in intervention. When these gains are multiplied out over a school year (i.e., 8.75 months), the data suggest that in the three areas noted above, the children would make over 11 months gain in one school year. Finally, when the Program Efficiency Index is calculated based on days present rather than total number of school days, the data indicated that in all areas, the children made gains of over one month per month in intervention.

Table 15
Program Efficiency Index and Projected School Year Developmental Gains for 1995-96 Kentucky Preschoolers With Speech Delays

Battelle Domains	PEI (Gain Per Month)		Projected Gain (PEI x 8.75 months)		PEI (Gains / Present Months)	
	M	SD	M	SD	M	SD
Personal-Social	1.77	1.87	15.52	16.35	2.47	2.60
Adaptive	1.40	1.58	12.25	13.87	1.91	2.12
Motor Total						
Gross Motor	1.32	2.51	11.58	21.92	1.86	3.48
Fine Motor	.80	1.43	7.02	12.48	1.07	1.59
Communication Total						
Receptive	.92	1.46	8.03	12.79	1.22	1.87
Expressive	.84	1.46	7.39	12.75	1.09	1.90
Cognitive	.99	.85	8.68	7.41	1.29	1.11
Total Development	**1.24**	**.87**	**10.86**	**7.57**	**1.68**	**1.14**

*N = 62.

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Table 16 presents the Battelle data for the children with severe disabilities. These children made developmental gains in each area of the Battelle. These gains ranged from 2.60 months in cognitive to 7.80 months in gross motor. In addition, a gain of 4.60 months was observed in total development (a composite score of all domains).

Table 16
Mean Developmental Age Equivalent on the Battelle Developmental Inventory at Pre- and Posttest, and Developmental Gains for 1995-96 Kentucky Preschoolers With Severe Disability

Battelle Domains	Pretest		Posttest		Developmental Gains	
	M	SD	M	SD	M	SD
Personal-Social	50.60	15.11	54.00	18.72	3.40	4.83
Adaptive	50.00	7.65	56.80	10.43	6.80	8.79
Motor total						
Gross Motor	35.60	6.02	43.40	15.26	7.80	14.86
Fine Motor	38.60	6.47	45.40	10.01	6.80	4.92
Communication total						
Receptive	41.60	13.50	47.00	18.47	5.40	8.05
Expressive	39.60	12.92	44.00	14.82	4.40	4.62
Cognitive	42.00	9.77	44.60	12.46	2.60	5.59
Total Development	**44.80**	**10.33**	**49.40**	**13.65**	**4.60**	**3.65**

N=5.
The average time between pre- and posttest = 5.80 months.
Chronological age at pretest = 55.20 months.
Chronological age at posttest = 61.00 months.

Data on the average gain per month are presented in Table 17. In adaptive skills, gross motor, and fine motor, these children averaged over one month gain per month in intervention. When these data are figured based on actual days present, the children made gains in all areas except personal-social and cognitive that are greater than one month per month of intervention.

Table 17
Program Efficiency Index and Projected School Year Developmental Gains for 1995-96 Kentucky Preschoolers With Severe Disabilities

Battelle Domains	PEI (Gain Per Month)		Projected Gain (PEI x 8.75 months)		PEI (Gains / Present Months)	
	M	SD	M	SD	M	SD
Personal-Social	.56	.74	4.89	6.51	.83	1.16
Adaptive	1.14	1.34	10.02	11.71	1.60	2.08
Motor Total						
Gross Motor	1.51	2.82	13.24	24.71	2.00	3.77
Fine Motor	1.22	.98	10.65	8.54	1.67	1.27
Communication Total						
Receptive	.84	1.30	7.32	11.37	1.34	1.99
Expressive	.83	.95	7.28	8.29	1.08	1.19
Cognitive	.47	.92	4.11	8.08	.66	1.41
Total Development	**.81**	**.66**	**7.10**	**5.79**	**1.14**	**.93**

N=5.

Table 18 presents the PCI's for the children with disabilities. Given that these children, by definition, were developing at a slower rate than what would be expected of their same age peers, the PCI's for these children would be expected to be greater than 1. That is, one would expect that an intervention program would result in children making greater developmental gains during the program than they were making prior to the program. The most significant improvements in rates of development, as demonstrated by PCI's greater than 1, occurred for children with speech language delays and those with developmental delays. The development rates for the children with speech and language delays increased across all domains. The developmental rates for the children with developmental delays improved in five of the seven domains. In terms of overall development, the children with severe disabilities gained at a higher rate than prior to their participation in the program. In addition, their overall rate of development increased in three of the seven domains and maintained prior rates in two additional domains.

Table 18
Means and Standard Deviations of Proprotional Change Index on the Battelle Developmental Inventory for 1995-96 Kentucky Preschoolers with Disabilities

Battelle Domains	Speech & Language Delay (N=62)		Developmentally Delayed (N=26)		Severe Disability (N=5)	
	M	SD	M	SD	M	SD
Personal Social	2.65	3.35	1.38	2.30	.46	.99
Adaptive	1.85	2.42	1.46	2.43	1.29	1.49
Motor						
Gross Motor	1.62	3.18	1.15	1.94	1.59	3.82
Fine Motor	1.07	2.07	.91	.81	1.45	1.22
Communication						
Receptive	1.13	1.83	1.66	2.10	.94	1.44
Expressive	1.11	1.96	.53	1.59	.98	1.20
Cognitive	1.24	1.11	1.29	1.30	.51	1.06
Total Development	**1.62**	**1.39**	**1.20**	**1.00**	**1.11**	**.86**

Figure 1 summarizes the projected developmental gains in an academic year (8.75 months), across all groups of children. While no one group of children are making comparable gains across all domains, all groups of children are making developmental progress.

Figure 1
Mean Scores of Projected School Year Developmental Gains for 1995-96 Preschoolers

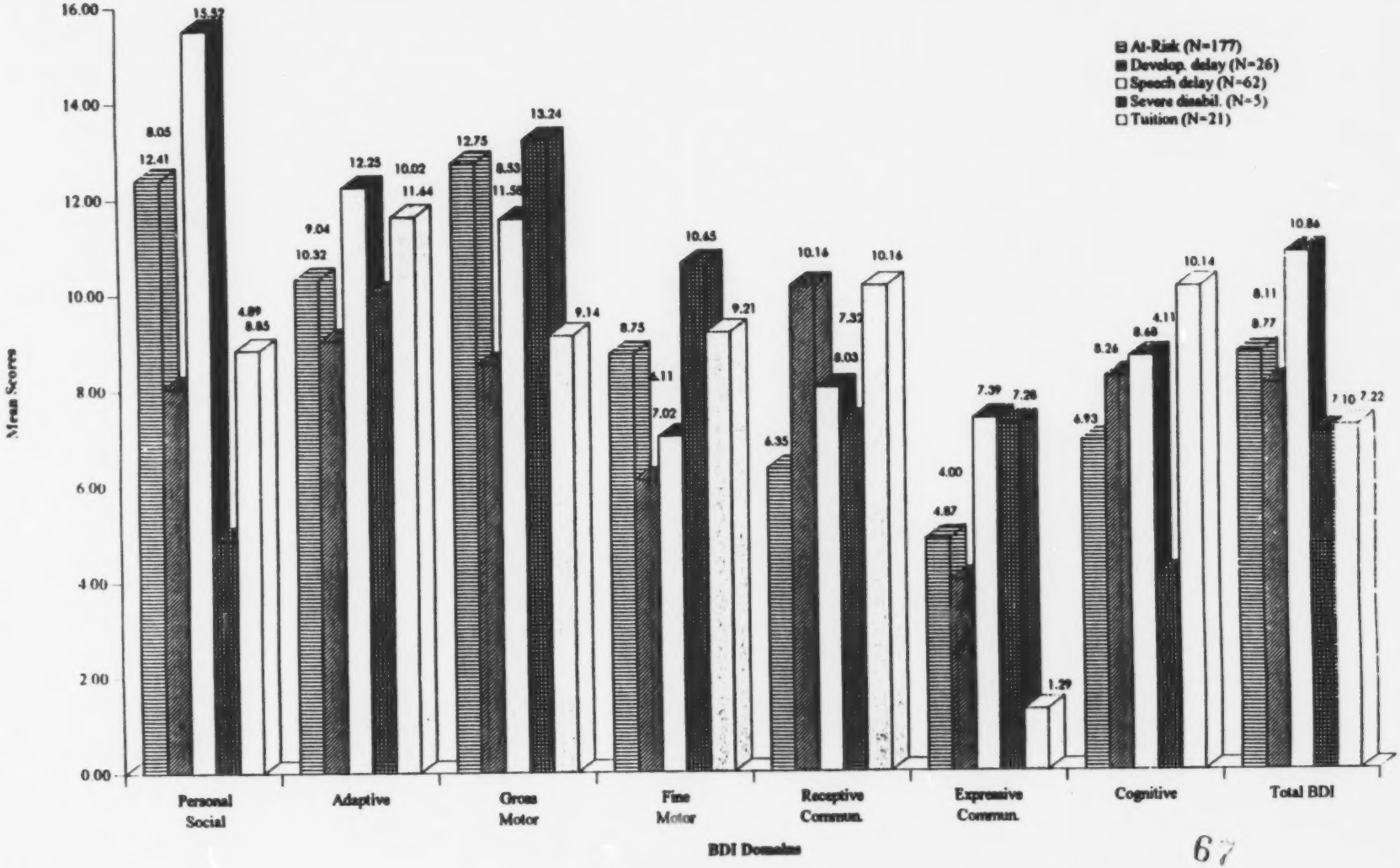


Figure 2 summarizes the mean scores of the Proportional Change Index across all groups of children. A PCI of greater than one indicates that the child's rate of development during the program is greater than the rate of growth before the program. If the child's rate of development before the program is greater than the rate of growth during the program, the PCI will be less than 1. Children with a speech delay scored above one in every domain as well as the overall Total BDI score. While the other groups of children are not consistant across the domains, their rate of development in at least one domain increased as a result of the program.

Figure 2
Mean Scores of Proportional Change Index (PCI) for 1995-96 Preschoolers

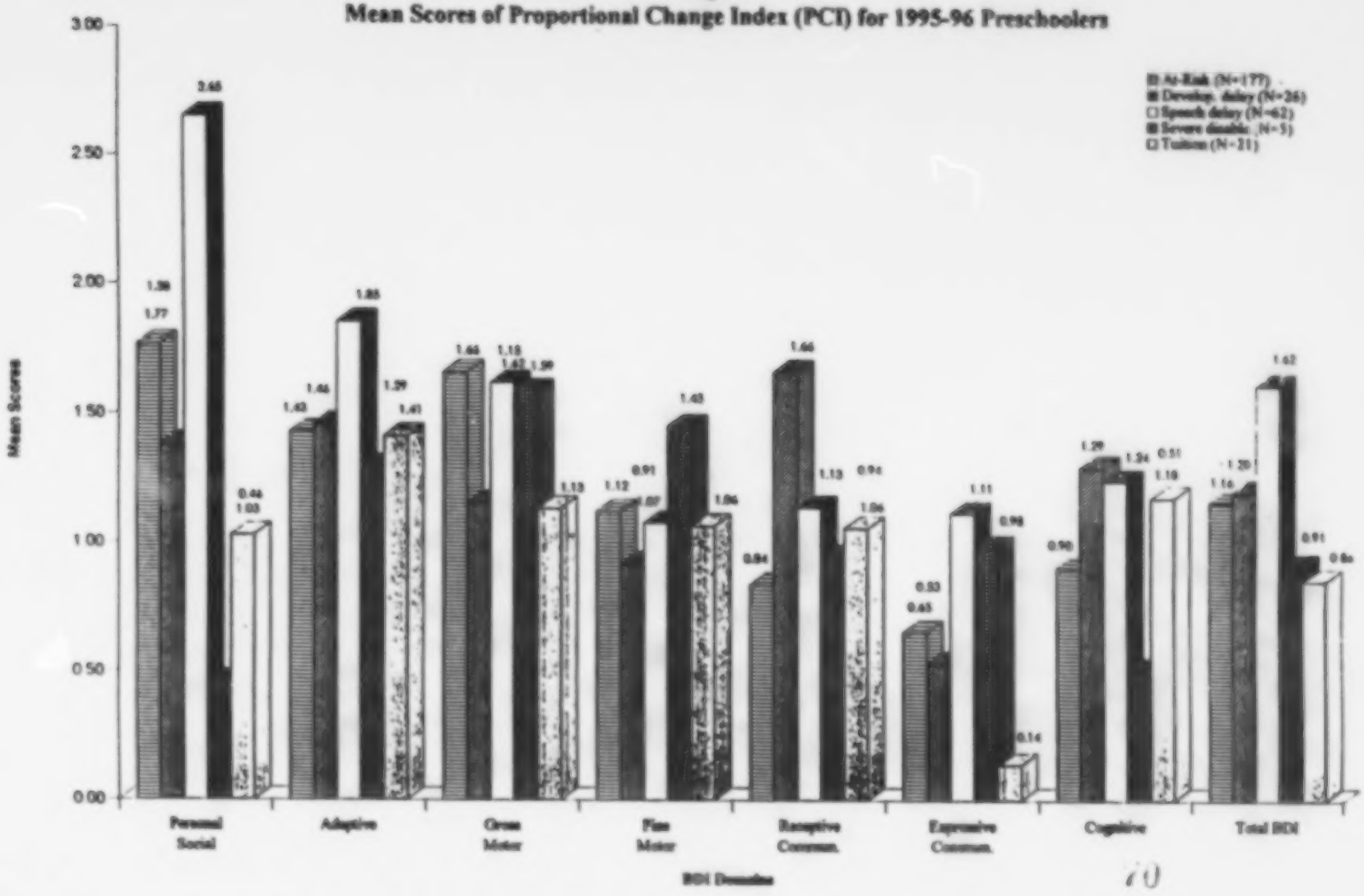
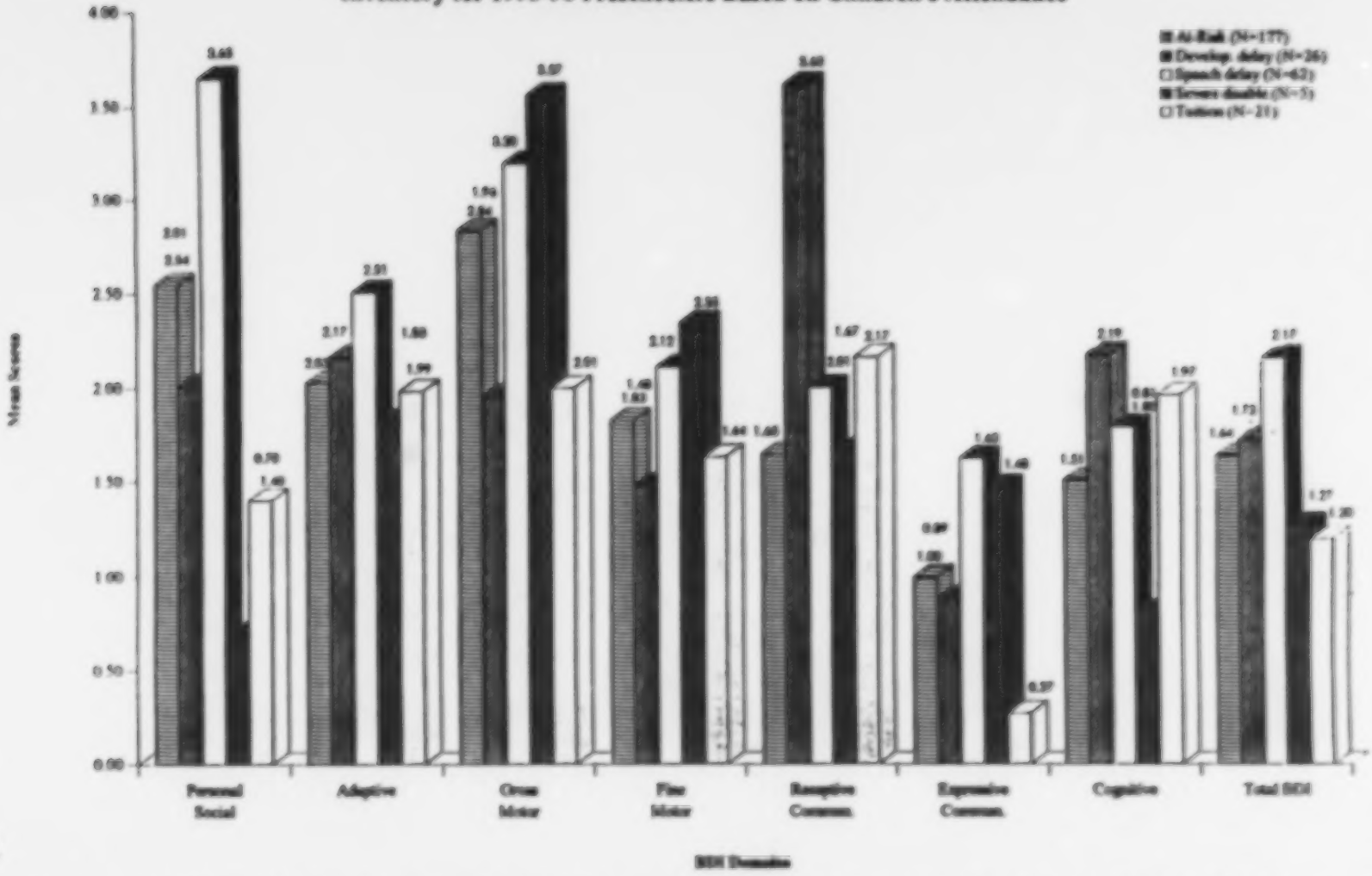


Figure 2a

Mean Scores of Proportional Change Index on Battelle Developmental Inventory for 1995-96 Preschoolers Based on Children's Attendance



71

The present days at school by March 15, 1996 were 4.41 months, 4.34 months, 4.41 months, 4.14 months, and 4.30 months for At-Risk, Develop. Delay, Speech Delay, Severe Disabilities, and Tuition groups.

72

Pretest/Posttest Developmental Gains of African-American Preschoolers

To ascertain whether the Kentrucky Preschool Program was meeting the needs of African-American participants, analyses were conducted to see if the Kentucky Preschool Program had the same or differential effects for children of different racial groups. In general, African-American children demonstrated progress in all areas as indicated by their average gains in all domains on the BDI ranging from 3.87 to 9.13 months (see Table 19). Average gains were most noticeable in the gross motor (M=9.13) and adaptive (M=8.90) domains. African-American children showed the least amount of progress in receptive communication (M=3.87) and cognitive (M=3.87). The overall mean gain on the BDI total score was 6.43 months for African-American children during the 5.74 months between their pretest and posttest.

Table 19
Mean Developmental Age Equivalent on the Battelle Developmental Inventory at Pre- and Posttest, and Developmental Gains for 1995-1996 At-Risk African-American Kentucky Preschoolers

Battelle Domains	Pretest		Posttest		Developmental Gains	
	M	SD	M	SD	M	SD
Personal-Social	50.23	10.96	58.10	10.68	7.87	8.84
Adaptive	52.30	9.12	61.20	11.29	8.90	8.98
Motor Total						
Gross Motor	54.27	11.65	63.40	9.11	9.13	9.84
Fine Motor	43.80	6.46	50.17	6.38	6.37	6.68
Communication Total						
Receptive	42.80	7.53	46.67	7.71	3.87	7.10
Expressive	44.80	8.02	49.10	4.44	4.30	6.06
Cognitive	43.60	5.06	47.47	5.90	3.87	6.11
Total Development	48.60	6.39	55.03	6.59	6.43	3.97

N=30
The average [illegible] pre and posttest is 5.73 months.
Chronological age at pretest = 53.93 months.
Chronological age at posttest = 59.67 months.

Projected Year-Long Developmental Gains for African-American Preschoolers

As demonstrated by the mean PEIs in Table 20, African-American children gained an average of 1.12 months in total BDI developmental age equivalents for each month of participation in the Kentucky Preschool Program. African-American children demonstrated their highest rates of development in gross motor (M=1.61), adaptive skills (M=1.52), and personal social (M=1.36) domains. Rate of progress was less in expressive communication (M=.78), receptive communication (M=.67) and cognitive (M=.66) skills.

Table 20
Program Efficiency Index and Projected School Year Developmental Gains for 1995-96 Economically At-Risk African-American Kentucky Preschoolers

Battelle Domains	PEI (Gain Per Month)		Projected Gain (PEI x 8.75 months)		Projected Gain (Gains / Present Months)	
	M	SD	M	SD	M	SD
Personal-Social	1.36	1.57	11.91	13.52	1.71	1.95
Adaptive	1.52	1.51	13.28	13.18	1.63	2.46
Motor Total						
Gross Motor	1.61	1.71	14.07	14.96	2.10	2.67
Fine Motor	1.11	1.13	9.72	9.93	1.26	1.40
Communication Total						
Receptive	.67	1.20	5.88	10.52	.84	1.42
Expressive	.78	1.11	6.81	9.74	.92	1.29
Cognitive	.66	1.12	5.76	9.77	.78	1.33
Total Development	**1.12**	**.67**	**9.77**	**5.87**	**1.33**	**.85**

N=30.
The time children were present at school = 4.99 months.

These PEIs were translated into projected developmental gains for a full school year (8.75 months), resulting in a projected average gain of 9.77 months on the total Battelle score.

The greatest projected gains were in the gross motor (M=14.07) and adaptive (M=13.28) domains.

To determine whether there were differential program effects for African-American children and Caucasian children, the developmental levels of both groups of students when they began the preschool program were considered. In terms of their pretest age equivalent scores on the Battelle Developmental Inventory, African-American students entered preschool with significantly higher scores in the gross motor subdomain, and significantly lower scores in the expressive communication subdomain. On the posttest, the African-American children scored significantly higher than Caucasian children in adaptive and gross motor domains, and significantly lower on the expressive communication domain (see Table 21). In all other domains, there were no significant differences between posttest scores of the African-American and Caucasian children.

Table 21
Mean Developmental Age Equivalent on the Battelle Developmental Inventory at Pre- and Posttest, and Developmental Gains for 1995-96 At-Risk African-American (N=30) and Caucasian (N=140) Kentucky Preschoolers

Battelle Domains	Pretest		Posttest		Developmental Gains	
	African-American[a]	Caucasian[b]	African American	Caucasian	African American	Caucasian
Personal-Social	50.23	52.65	58.10	60.99	7.87	8.34
Adaptive	52.30	51.17	61.20*	57.45*	8.90	6.28
Motor Total						
Gross Motor	54.27*	49.35*	63.40**	57.75**	9.13	8.40
Fine Motor	43.80	44.87	50.17	50.49	6.37	5.62
Communication Total						
Receptive	42.80	44.89	46.62	49.20	3.87	4.31
Expressive	44.80**	49.26**	49.10***	52.30***	4.30	3.04
Cognitive	43.60	44.92	47.47	49.92	3.87	5.00
Total Development	**48.60**	**49.80**	**55.03**	**55.49**	**6.43**	**5.69**

$^{**}p < .01$, $^{***}p < .00$.

[a] The average time between pre- and posttest is 5.73 months.
Chronological age at pretest = 53.93 months.
Chronological age at posttest = 59.67 months.

[b] The average time between pre- and posttest is 6.01 months.
Chronological age at pretest = 53.31 months.
Chronological age at posttest = 59.32 months.

Based on a comparison of PEIs included in Table 22, the rates of developmental progress according to their total Battelle scores during program participation for African-American children was 1.12 and for Caucasian preschool children was .96. Although the rate of gain was higher for African-American children, the difference is too small to be statistically significant. When these PEIs were used to project the gains that the children would make in a full school year, the African-American children would make an average gain of 9.77 months and the Caucasian children would make an average gain of 8.40 months on the total Battelle. Again, this difference of about one and a half months over the course of the school year was not statistically significant. It does indicate, however, that the Kentucky Preschool Program is meeting the needs of African-American children as well as those of Caucasian children.

Table 22
Means of Program Efficiency Index and Projected School Year Developmental Gains for 1995-96 Economically At-Risk African-American (N=30) and Caucasian (N=140) Preschoolers

Battelle Domains	PEI (Gain for Month)		Projected Gain (PEI x 8.75 months)		PEI (Gains/Present Months)	
	African-American[a]	Caucasian[b]	African-American	Caucasian	African-American	Caucasian
Personal-Social	1.36	1.42	11.91	12.45	1.71	2.08
Adaptive	1.52	1.05	13.28	9.21	1.63	1.59
Motor Total						
Gross Motor	1.61	1.41	14.07	12.35	2.10	1.93
Fine Motor	1.11	.95	9.72	8.33	1.26	1.33
Communication Total						
Receptive	.67	.72	5.88	6.31	.84	1.03
Expressive	.78	.51	6.81	4.48	.92	.72
Cognitive	.66	.84	5.76	7.31	.78	1.23
Total Development	**1.12**	**.96**	**9.77**	**8.40**	**1.33**	**1.40**

[a] time children were present at school = 4.99 months.
[b] e children were present at school = 4.28 months.

Table 23 summarizes the Program Efficiency Index for all categories of children. Overall children are making progress in the Personal-Social, Adaptive, Gross Motor, and Fine Motor. The children are making the least progress in the Receptive Communication, Expressive Communication, and Cognitive domains almost universally.

Table 23
Program Efficiency Index (PEI) of BDI Domains for 1995-96 Preschoolers

BDI Domains	At risk (N=177)		Dev. delay (N=26)		Speech delay (N=62)		Severe delay (N=5)		African-Amer. (N=30)		Caucasian (N=140)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Personal social	1.42	1.87	.92	1.36	1.77	1.87	.56	.74	1.36	1.54	1.42	1.95
Adaptive	1.18	1.48	1.03	1.78	1.40	1.58	1.14	1.34	1.52	1.51	1.05	1.45
Gross motor	1.46	1096	.98	1.60	1.32	2.51	1.51	2.82	1.61	1.71	1.41	2.02
Fine motor	1.00	1.08	.70	.62	.80	1.43	1.22	.98	1.11	1.13	.95	1.07
Receptive communication	.73	1.34	1.16	1.45	.92	1.46	.84	1.30	.67	1.20	.72	1.34
Expressive communication	.56	.95	.46	.99	.84	1.46	.83	.95	.78	1.11	.51	.92
Cognitive	.79	1.03	.94	.85	.99	.85	.47	.92	.66	1.12	.84	1.02
Total BDI	**1.00**	**.73**	**.93**	**.74**	**1.24**	**.87**	**.81**	**.66**	**1.12**	**.67**	**.96**	**.73**

However when the Program Efficiency Index is figured using actual number of days present the results are different. This can be seen in Table 24. Children made at least a one month development gain for each month in the program in all but a few domains. All groups of children had PEI's that were greater than one on the overall score of the BDI.

Table 24

Program Efficiency Index (PEI) of BDI Domains for 1995-96 Preschoolers Based on Children's Present Days at School

BDI Domains	At risk (N=177)		Dev. delay (N=26)		Speech delay (N=62)		Severe delay (N=5)		African-Amer.. (N=30)		Caucasian (N=140)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Personal social	2.02	2.74	1.35	1.96	2.47	2.60	.83	1.16	1.71	1.95	2.08	2.89
Adaptive	1.66	2.29	1.54	2.65	1.91	2.12	1.60	2.08	1.63	2.46	1.59	2.25
Gross motor	2.00	2.85	1.36	2.25	1.86	3.48	2.00	3.77	2.10	2.67	1.93	2.88
Fine motor	1.34	1.45	1.01	.88	1.07	1.59	1.67	1.27	1.26	1.40	1.33	1.47
Receptive commun.	1.02	2.01	1.68	2.18	1.22	1.87	1.34	1.99	.84	1.42	1.03	2.08
Expressive commun.	.75	1.29	.65	1.47	1.09	1.90	1.08	1.19	.92	1.29	.72	1.31
Cognitive	1.13	1.56	1.35	1.19	1.29	1.11	.66	1.41	.78	1.33	1.23	1.61
Total BDI	**1.41**	**1.12**	**1.34**	**1.09**	**1.68**	**1.14**	**1.14**	**.93**	**1.33**	**.85**	**1.40**	**1.15**

The Proportional Change Index for the BDI across all groups of children can be seen in Table 25. Children appear to be making progress in the program as indicated by PCI's that are greater than on the total BDI score for all groups of children except those with severe disabilities.

Table 25

Proportional Change Index (PCI) of BDI Domains for 1995-96 Preschoolers

BDI Domains	At risk (N=177)		Dev. delay (N=26)		Speech delay (N=62)		Severe delay (N=5)		African-Amer. (N=30)		Caucasian (N=140)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Personal social	1.77	2.43	1.38	2.30	2.65	3.35	.46	.99	1.67	2.31	1.77	2.45
Adaptive	1.43	1.92	1.46	2.43	1.85	2.42	1.29	1.49	1.71	1.98	1.28	1.82
Gross motor	1.66	2.26	1.15	1.94	1.62	3.18	1.59	3.82	1.86	1.98	1.59	2.29
Fine motor	1.12	1.25	.91	.81	1.07	2.07	1.45	1.22	1.27	1.39	1.05	1.22
Receptive communication	.84	1.53	1.66	2.10	1.13	1.83	.94	1.44	.80	1.32	.81	1.50
Expressive communication	.65	1.12	.53	1.59	1.11	1.96	.98	1.20	.94	1.45	.60	1.04
Cognitive	.90	1.16	1.29	1.30	1.24	1.11	.51	1.06	.79	1.23	.95	1.16
Total BDI	**1.16**	**.98**	**1.20**	**1.00**	**1.62**	**1.39**	**.91**	**.86**	**1.27**	**.84**	**1.10**	**.97**

Social Skills

The responses from Social Skills Rating System completed by teachers and parents were converted into standard scores using age-based norms ($M = 100$, $SD = 15$). For the preschool cohort, standard mean scores and standard deviations were calculated from both teacher and parent questionnaires. The results are reported in terms of a total social skills score and a problem behaviors total score. A lower score on the problem behavior scale indicates fewer behavioral problems as observed by a child's teacher or parent.

Pretest/Posttest Social Skills Gains for Economically At-Risk Preschoolers

The overall results for preschool children presented in Table 26 show that the social skills of Kentucky Preschool children compare favorably with the social skills of a national sample of preschool children of similar age. Analyses revealed statistically significant gain from their mean pretest total score of 102.22 to their mean posttest total score of 111.11 in the area of social skills as rated by their teachers ($p < .00$). Teachers also indicated that problem behaviors decreased during this time.

Table 26
Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Economically At-Risk Kentucky Preschoolers

			Pretest	Posttest	P
Social Skills	Teacher	M	102.22	111.11	.00
	(N=177)	SD	16.00	14.66	
	Parent	M	96.38	98.37	.20
	(N=52)	SD	15.54	13.29	
Problem Behavior[a]	Teacher	M	97.27	96.37	.29
	(N=177)	SD	12.55	12.45	
	Parent	M	103.54	104.88	.35
	(N=52)	SD	13.64	13.22	

[a]A lower score is desirable in Problem Behavior.

Further analyses were conducted to determine the specific areas of social skills improvement. Results showed significant improvements in total social skills ($p < .00$), specifically in the positive use of assertive behavior ($p < .00$) during social interactions, and in the use of self-control ($p < .00$). Results in the specific areas of cooperation, assertion, and self-control are reported in Table 27 in terms of the percentages of economically at-risk preschool children who were rated as having "fewer than average" social skills, "average" social skills, or "more than average" social skills. Approximately 14% of students entering Kentucky Preschool Programs exhibited "fewer than average" social skills than developmentally expected for their age. However, upon completion of the program approximately 46% of the at-risk children were rated by their teachers as having increased their social skills to the "more than average" level (an estimated 24% improvement).

Table 27
Percentage of SSRS Sub-Scales Rated by Teachers As Being Fewer Than Average, Average, or More Than Average for 1995-96 Economically At-Risk Preschoolers

SSRS Sub-scales	Pretest	Posttest	P
Cooperation			.00
Fewer	11.86	6.78	
Average	74.01	67.80	
More	14.12	25.42	
Assertion			.00
Fewer	14.69	5.65	
Average	64.97	55.93	
More	20.34	38.42	
Self-Control			.00
Fewer	12.43	4.52	
Average	64.97	55.37	
More	22.60	40.11	
Social Skills Total			.00
Fewer	14.12	5.65	
Average	63.28	48.02	
More	22.60	46.33	
Problem Behaviors Total			.37
Fewer	30.51	32.77	
Average	58.76	58.19	
More	10.73	9.04	

N=177.

Generally, Kentucky Preschoolers were rated by teachers as exhibiting problem behaviors within the expected range for their developmental levels. Teachers rated only 11% of the Kentucky Preschoolers as having behavioral problems exceeding the average child in both number and severity at pretest. Overall, there was little change in the number and severity of problem behaviors as a result of Kentucky Preschool participation between pretest and posttest. At posttest, teacher ratings indicated that 33% of the children had "fewer than average" problems, 58% showed an "average" number of problem behaviors, and 9% experienced "more than average" behavioral difficulties.

Similar improvements were noted in the parent ratings of social skills and problem behaviors. Consistent with teachers, parent ratings presented in Table 28 also showed gains for children, although not statistically significant. Problem behavior ratings decreased but not significantly, with a 4% decline in the number of children rated by parents as having a "more than average" level of problem behaviors.

Table 28
Percentage of SSRS Sub-Scales Rated by Parents As Being Fewer Than Average, Average, or More Than Average for 1995-96 Economically At-Risk Preschoolers

SSRS Sub-scales	Pretest	Posttest	P
Cooperation			.18
Fewer	26.92	17.31	
Average	63.46	71.15	
More	9.62	11.54	
Assertion			.60
Fewer	15.38	15.38	
Average	76.92	73.08	
More	7.69	11.54	
Self-Control			.50
Fewer	26.92	15.38	
Average	65.38	82.69	
More	7.69	1.92	
Responsibility			.18
Fewer	28.85	15.38	
Average	65.38	80.77	
More	5.77	3.85	
Social Skills Total			.50
Fewer	23.08	15.38	
Average	63.46	73.08	
More	13.46	11.54	
Externalizing Behavior			.48
Fewer	17.31	13.46	
Average	69.23	73.08	
More	13.46	13.46	
Internalizing Behavior			.16
Fewer	0.00	0.00	
Average	88.46	80.77	
More	11.54	19.23	
Problem Behaviors Total			1.00
Fewer	13.46	9.62	
Average	63.46	71.15	
More	23.08	19.23	

N=52.

Pretest/Posttest Social Skills Gains for Preschoolers with Disabilities

The Social Skills Rating System (SSRS) was sent to the parents and teachers of all children with disabilities who were tested. Social skills data for children with developmental delays are included in Table 29. For the children with developmental delays, 26 teachers returned the SSRS at both pre- and posttest, and 4 parents returned the SSRS at pretest and posttest. Both the teachers and the parents rated the children's social skills higher at posttest than pretest. However, the difference between ratings at pre- and post-testing was significant only for teachers. Teachers rated children's social skills higher than parents did at both pre- and post-testing. In terms of problem behaviors, parents rated children as having fewer behavior problems at post-testing than at pre-testing. The teacher and parent ratings were quite similar at pretest and slightly different at posttest.

Table 29
Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Kentucky Preschoolers With Developmental Delays

			Pretest	Posttest	P
Social Skills	Teacher	M	94.12	103.85	.04
	(N=26)	SD	16.61	16.18	
	Parent	M	89.50	97.00	57
	(N=4)	SD	16.78	18.57	
Behavior[a]	Teacher	M	100.92	101.08	.97
	(N=26)	SD	14.72	14.57	
	Parent	M	100.25	99.25	.94
	(N=4)	SD	17.84	17.54	

[a]A lower score is desirable on Problem Behavior.

Social skills data for children with speech and language delays are included in Table 30. For children with speech and language delays, 62 teachers returned the SSRS at both pre- and posttest, and 23 parents returned the SSRS at pre and posttest. Both the teachers and the parents rated the children's social skills higher at posttest than at pretest. Again, the differences between ratings at pre- and post-testing were significant only for the teachers. The teachers rated children's social skills higher than parents did at both pre- and post-testing. In terms of problem behaviors, teachers and parents rated children as having fewer behavior problems at post-testing than at pre-testing. However the differences were minimal and were not significantly significant.

Table 30
Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Kentucky Preschoolers With Speech Delays

			Pretest	Posttest	P
Social Skills	Teacher	M	97.47	105.60	.01
	(N=62)	SD	18.91	17.28	
	Parent	M	89.39	94.74	.26
	(N=23)	SD	15.07	16.70	
Problem Behavior	Teacher	M	99.23	98.00	.62
	(N=62)	SD	13.61	14.14	
	Parent	M	109.13	108.52	.88
	(N=23)	SD	14.30	13.16	

[a]A lower score is desirable on Problem Behavior.

Social skills data for children with severe disabilities are included in Table 31. For children with severe disabilities, five teachers returned the SSRS at both pre- and posttest, and 2 parents returned the SSRS at pre and post-testing. Teachers rated children's social skills higher at posttest than at pretest, but the differences were not significant. In terms of problem behaviors, the parents rated the children as having fewer behavior problems at post-testing than at pre-testing. Again, the differences were not statistically significant.

Table 31
Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 Kentucky Preschoolers with Severe Disabilities

			Pretest	Posttest	P
Social Skills	Teacher (N=5)	M	103.60	105.80	.90
		SD	29.33	21.06	
	Parent (N=2)	M	108.00	103.00	.81
		SD	14.14	21.21	
Problem Behavior[a]	Teacher (N=5)	M	93.40	99.00	.41
		SD	10.26	10.20	
	Parent (N=2)	M	111.50	103.50	.72
		SD	20.51	17.68	

[a]A lower score is desirable in Problem Behavior.

Pretest/Posttest Social Skills Gains for African-American Preschoolers

The social skills gains for African-American children attending Kentucky Preschools were determined by comparing the mean social skills and problem behavior scores at pretest with their posttest scores. The results reported in Table 32 show that the mean teacher ratings of African-American children indicate average social skills overall when compared to peers in a national norm group (M = 100, SD = 15). Similarly, teacher ratings for problem behaviors also were within the average range.

Table 32
Means and Standard Deviations of Social Skills and Problem Behavior Rated by Teachers and Parents for 1995-96 African-American and Caucasian Economically At-Risk Preschoolers

SSRS		African-American			Caucasian		
		Pretest	Posttest	P	Pretest	Posttest	P
Social Skills							
Teachers	M	102.47	109.93	.00	102.65	111.49	.00
	SD	18.88	19.13		15.13	13.66	
Parents	M	89.71	93.86	.16	97.57	99.00	.41
	SD	8.96	8.15		16.31	14.01	
Problem Behaviors							
Teachers	M	98.43	96.20	.12	96.84	96.30	.58
	SD	14.10	15.31		12.12	11.74	
Parents	M	107.71	109.57	.76	102.73	104.09	.35
	SD	11.73	14.43		14.03	13.19	

African-American: Teachers' Form N = 30, Parents Form N = 7.
Caucasian: Teachers' Form N = 140, Parents Form N = 44.

Teacher ratings of problem behaviors remained relatively unchanged from pretest to posttest. The changes reported by parents were not statistically significant.

These trends are consistent with the previous 1994-95 evaluation findings and in combination with the teacher ratings suggest that Kentucky Preschools have real impact on the development of social skills related to school success for African-American children. Moreover, the consistent similarity between these social skills outcomes over the

last three years and the gains of both African-American and Caucasian children suggest that the overall benefits in the area of social development appear to be equally positive for all children participating in Kentucky Preschools, regardless of racial or ethnic background.

Early Literacy Skills

Pretest/Posttest Early Literacy Skills of Economically At-Risk Preschoolers

The preschoolers' scores on the Letter Recognition Test indicated that the children made significant gains in their knowledge of the alphabet between pre- and posttest as indicated in Table 33. Their scores indicated significant improvement in their ability to recognize upper and lower case letters and in their ability to write the upper and lower case letters. The percentage of children who could recognize their names increased from 4% to 21% between pre- and posttest. Students also made statistically significant gains from pretest to posttest on the Book Handling Knowledge Test, indicating an increased understanding of [illegible] concepts that are necessary prerequisites for learning to read.

Table 33
Means and Standard Deviations of the Early Literacy Measures for 1995-96 Economically At-Risk Preschoolers

Early Literacy Measures		Pretest	Posttest	P
Recognizes Upper Case Letters	M	3.73	8.28	.00
	SD	6.82	8.75	
Recognizes Lower Case Letters	M	2.27	5.42	.00
	SD	5.15	7.73	
Total Letter Recognition	M	6.00	14.21	.00
	SD	11.58	17.64	
Writes Upper Case Letters	M	.69	2.54	.00
	SD	2.53	5.47	
Writes Lower Case Letters	M	.05	.53	.00
	SD	.30	2.11	
Total Letter Writing	M	.81	3.32	.00
	SD	2.74	7.10	
Total Letter Recognition Score	M	7.54	18.34	.00
	SD	14.54	22.84	
Book Handling Test	M	7.71	10.41	.00
	SD	3.43	3.38	

N = 177.

Pre/Posttest of Early Literacy Skills of African-American Economically At-Risk Preschoolers

African-American children made significant gains in their knowledge of the alphabet between pre and posttest as indicated in Table 34. Their scores indicate a statistically significant improvement in their ability to recognize both upper and lower case letters and in their ability to write upper and lower case letters. The percentage of African American children who could recognize their own names increased from 3% to 16%.

The African-American children's scores on the Book Handing Test also showed significant improvement between pre and posttest, indicating increased knowledge of the print con[illegible]hat are necessary prerequisites for learning to read.

Table 34
Means and Standard Deviations of Early Literacy Measures for 1995-96 African-American Economically At-Risk Preschoolers

Early Literacy Measures		Pretest	Postiest	P
Recognizes Upper Case Letters	M	4.27	10.70	.00
	SD	7.62	9.90	
Recognizes Lower Case Letters	M	2.63	7.60	.00
	SD	5.55	8.84	
Total Letter Recognition	M	6.90	18.30	.01
	SD	13.11	18.49	
Writes Upper Case Letters	M	.23	4.13	.00
	SD	1.28	6.48	
Writes Lower Case Letters	M	0.00	.40	.04
	SD	0.00	1.04	
Total Letter Writing	M	.23	4.57	.00
	SD	1.28	6.97	
Total Letter Recognition Score	M	7.73	24.27	.00
	SD	14.41	24.77	
Book Handling Test	M	7.17	9.70	.00
	SD	3.25	3.32	

N=30.

Evaluation Question 3

3. What relationships exist between the various aspects of program implementation and student outcomes?

To investigate if any relationships exist between the Configuration Map for Preschool Programs, the Early Childhood Environment Rating Scale and student gains, correlational statistics were conducted. The observed gains from pre and posttest scores on the BDI, SSRS, and Literacy were used in this calculation. Table 35 shows the correlations that exist between the Configuration Map for Preschool Programs and the student outcomes from the Battelle Development Inventory, Social Skills Rating System (as rated by the teacher), and the Early Literacy Measures. While several correlations are statistically significant, they are not meaningful.

Table 35
Correlations Between Student Gains on BDI, SSRS, Early Literacy, and the Configuration Map for At-Risk Preschoolers

	Learning Environment	Utilizing Developmentally Appropriate Practices	Promoting Families	Assessment	Coordinating Resources	Professional growth
BDI						
Personal social	-.06	.02	-.13	.01	-.02	-.04
Adaptive	-.06	.07	.04	-.07	.06	.02
Gross motor	-.07	-.06	-.07	-.03	-.01	-.07
Fine motor	.04	.00	.09	.02	.03	.06
Motor total	-.03	-.04	-.02	-.03	.00	-.04
Receptive	.08	.06	.10	.02	.17*	.17*
Expressive	.06	.01	.06	.07	.12	.06
Communication total	.02	-.00	.04	-.04	.09	.08
Cognitive	-.10	-.16*	-.10	-.07	-.07	-.09
BDI Total	-.07	-.04	-.06	-.05	.05	-.00
SSRS						
Social skills-teacher	-.14	-.03	-.19*	-.08	-.16	-.13
blem Behavior-teacher	.02	-.09	.08	-.05	.10	.06
cy						
c name	-.01	.02	.04	.06	-.05	.08
W	-.02	-.01	-.01	.02	-.08	.04
Reco al letters	-.02	-.09	-.14	.00	-.14	-.14	
Recognize letters	-.05	-.15	-.16*	-.04	-.19*	-.18*
Letter recogniti	-.04	-.08	-.19	-.05	-.15	-.15
Write capital letter	.01	-.03	-.08	.03	-.11	-.10
Write small letter	-.06	-.07	-.12	-.03	-.10	-.14
Letter write	-.06	-.10	-.16*	-.03	-.18*	-.18*
Total letter	-.05	-.13	-.18*	-.02	-.20*	-.19*
Book handling	.02	-.01	.04	.01	.11	.05

N=165.
*$P < .05$.

Table 36 presents the relationships between student gains on the Battelle Developmental Inventory, the Social Skills Rating System (as rated by the teacher), Early Literacy Measures, and the sub-scale scores on the Early Childhood Environment Rating Scale. While there are statistically significant relationships, they also, do not appear to be meaningful to the preschool program.

Table 36
Correlations Between Student Gains on BDI, SSRS, Early Literacy, and Early Childhood Environment Rating Scale for At-Risk Preschoolers

	Personal Care	Furnish display	Language reason	Fine/Gross motor	Creative activity	Social development	Adults
BDI							
Personal social	.11	-.06	.02	.03	.03	-.03	-.06
Adaptive	.06	-.12	.08	.04	.10	.04	.04
Gross motor	.02	-.00	-.08	-.07	.03	-.04	-.10
Fine motor	-.02	-.03	.03	-.02	.04	-.03	.07
Motor total	.01	.01	-.04	-.09	.07	-.04	-.04
Receptive communication	.00	.01	-.06	.14	.06	.00	.07
Expressive communication	.14	.06	.00	-.03	.02	.06	.07
Communication total	.08	-.03	-.08	.04	.04	.01	-.03
Cognitive total	-.04	-.04	-.12	-.07	-.10	-.16	-.09
BDI total	.05	-.12	-.06	.00	.03	-.08	-.03
SSRS							
Social skill-teacher	.10	-.18*	-.06	.04	-.11	-.05	-.30*
Problem behavior-teacher	-.11	.07	-.15	.04	-.03	-.04	.04
Literacy							
Recognize name	-.02	-.01	.08	.05	.02	-.01	.04
Write name	-.01	-.01	.04	-.02	.08	-.04	.04
Recognize capital letters	-.14	.03	-.07	-.15	-.03	-.09	-.04
Recognize small letters	-.19*	-.01	-.11	-.16*	-.08	-.15*	-.05
Letter recognition	-.12	.01	-.11	-.13	-.06	-.10	-.09
Write capital letters	-.08	-.04	.01	-.11	-.01	-.06	-.03
Write small letters	.03	-.03	.00	-.16*	.02	-.08	-.02
Letter write	-.11	-.09	-.04	-.19*	-.05	-.13	-.08
Total letter	-.17*	-.03	-.08	-.19*	-.06	-.15	-.07
Book handling	.03	.01	-.03	.01	.02	-.02	.07

N=165
*$p < .05$.

To further investigate these relationships a correlation test was run between the Proportional Change Index (PCI) for the 291 preschool children in Cohort 6, and the Total Scores for both the Early Childhood Environment Rating Scale and the Configuration Map for Preschool Programs. The results are seen on Table 37. It appears that programs that have a higher score on the Total Configuration Map have students whose PCI scores are also higher in the areas of receptive communication, expressive, communication, and total communication.

Table 37
Correlation Between Proportional Change Index (PCI) and Total Scores of Early Childhood Environmental Rating Scale and Preschool Configuration Map

PCI Scores	ECERS	Configuration Map
Personal	-.03	-.02
Adaptive	-.02	-.03
Total Motor		
Gross Motor	.02	.02
Fine Motor	-.03	-.02
Total Communication		
Receptive Communication	.11	.15*
Expressive Communication	.07	.13*
Cognitive	.01	.02
BDI Total	**.01**	**.04**

N=291.
*$p < .05$.

Evaluation Question 4

4. How does the performance of Kentucky Preschool participants compare with the performance of same-age eligible and non-eligible non-participants as they enter kindergarten?

Purpose

The purpose of this question was to determine readiness for kindergarten among children who attended the Kentucky Preschool Programs as compared to two other groups of students: a) students who were eligible for the preschool program the previous year but had not participated in the program, and b) students who were not eligible for the Kentucky Preschool Programs. This question was designed to address the extent to which the Kentucky Preschool Programs prepared children for entry into kindergarten. One of the goals of the preschool programs is to ensure that children are ready to begin school. We chose two groups of comparison students to determine if the children were more prepared after the preschool program than if they had not attended the preschool programs and to determine if the children were as prepared for kindergarten as their non-at-risk peers. Both of these questions are important because it is possible that Kentucky Preschool participants could be more prepared than they would have been had they not participated in the program but still not as prepared as children who are not at-risk.

Sampling Strategy

The Kentucky Preschool Evaluation Project attempted to locate 400 kindergarten children, 200 who had attended a state-funded preschool the previous year and 200 who had not. The children were recruited from randomly selected sites within the 22 districts identified for preschool testing. Once the sites were selected, phone calls were made to the schools to gather information about the number of kindergarten classes and teachers. This resulted in the identification of 97 kindergarten classes and 81 kindergarten teachers.

Locator sheets were then sent to the kindergarten classes in an attempt to create a pool from which the 400 children could be selected for participation in the study. Sixty-seven teachers and a total of 375 students were selected from the returned locator sheets. Packets containing the instruments (described below) were sent to each of the teachers.

Of the 375 sets of instruments that were mailed, 258 were returned for a return rate of 69%.

Two instruments related to children's transition to, or readiness for kindergarten were used. Both instruments were adapted from their original format in order to ensure that the instrument answered the proposed research questions. The first instrument was adapted from the Pupil Behavior Inventory (Weikart, Delorie, Lawson, & Weigerink, 1993). Minor changes were made in the format, and an additional choice (i.e., don't know) was added to the Likert scale used to complete the instrument. This instrument asks teachers to rate the frequency with which specific social skills and behaviors (e.g., aggressive toward peers, shows initiative, shows positive leadership) are exhibited by the child. This instrument included 34 items that were rated on a five-point Likert scale. In addition, there was a code for indicating that the teacher did not have the information for answering the question. The second instrument was adapted from the Elementary School Teacher Questionnaire (Peisner, Bryant, & Clifford, 1988), and was referred to as the Questionnaire on Transition from Preschool to Primary. The Likert scale was used as presented in the original instrument but some items were removed and other items were added in order to ensure that it addressed the goals of the state-funded preschool education program. This instrument asked teachers to rate how prepared children were in terms of both academics (e.g., pre-literacy skill development) and behaviors (e.g., joins in activities). It consisted of 16 items that were rated on a five-point Likert scale. Both instruments are included in Appendix 4.

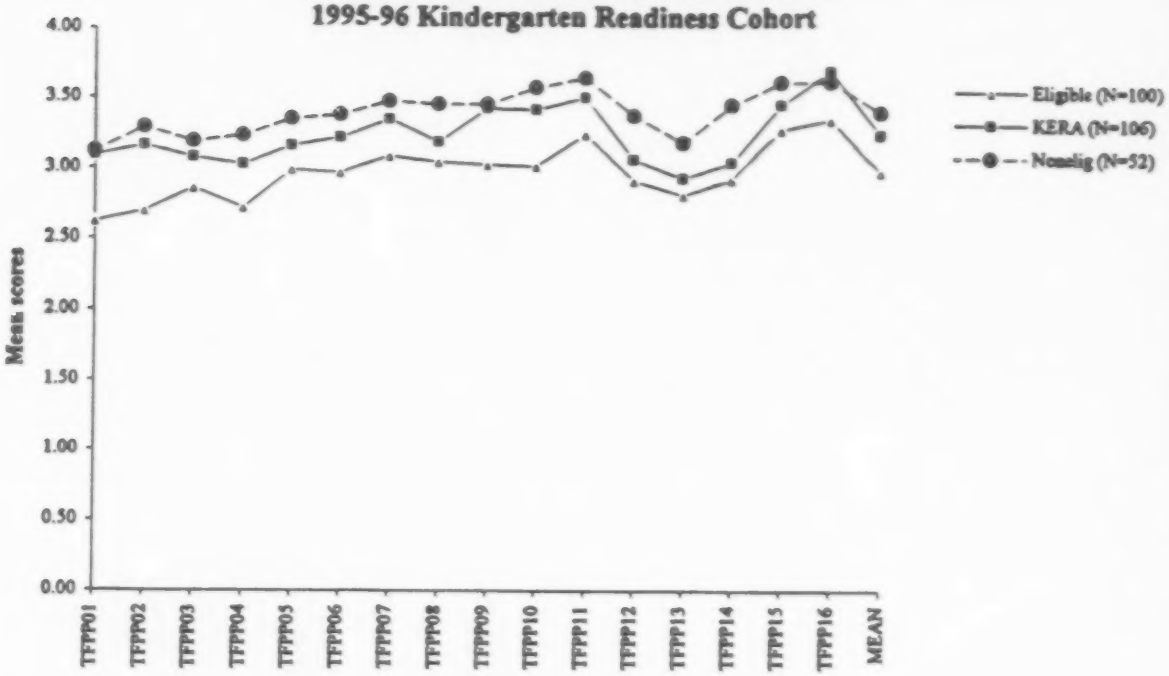
Results

Of the 258 children [illegible] were selected for participation in this study, 100 children were eligible for preschool programs the previous year but had not attended (i.e., eligible non-participants), 106 children were eligible and had attended (i.e., eligible participants), and 52 children were not eligible for the programs (i.e., non-eligible).

Figure 3 displays the results of the Questionnaire on Transition from Preschool to Primary. The figure indicates that the children who were not eligible did slightly better than the state-funded participants and the eligible non-participants. In addition, the Kentucky Preschoolers participants did better than the eligible non-participants.

Figure 3

Mean Scores on Transition Questionnaire for 1995-96 Kindergarten Readiness Cohort



When these groups are compared statistically (see Table 38), significant differences between the Kentucky Preschool participants and the eligible non-participants were observed. These differences favored the state-funded participants. Non-eligible children did better than the state-funded participants, but, there were not significant differences between the two groups. In summary, the results of this instrument suggest that children who attend a Kentucky Preschool are viewed by their teachers as being better prepared than their peers who were eligible for but who did not attend the Kentucky Preschool Programs. In addition, the state-funded participants are viewed by their teachers as being as prepared as their non-eligible peers.

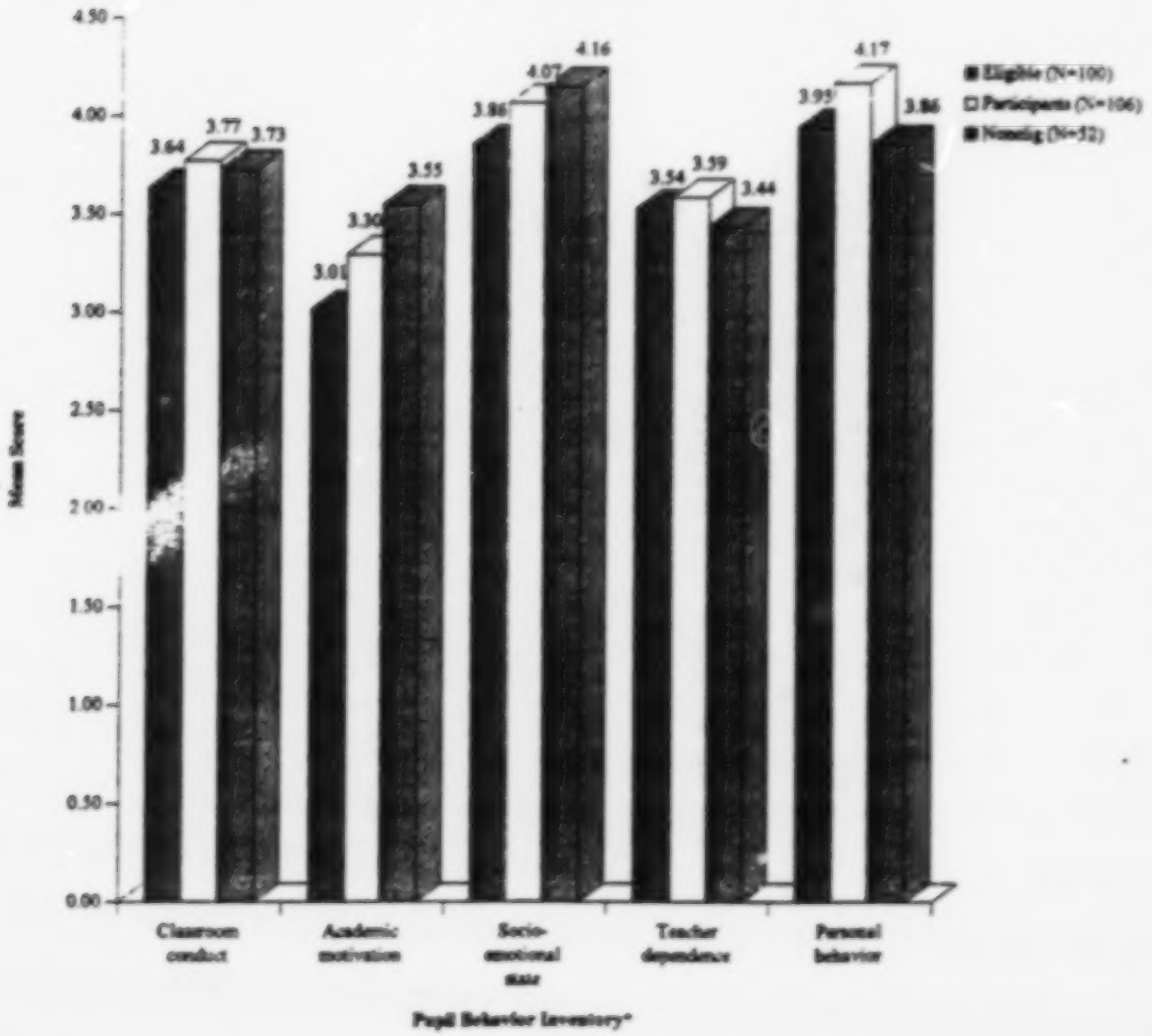
Table 38
Mean Scores of Questionnaire of Transition From Preschool to P1 (Kindergarten) for 1995-96 Readiness Cohort

	Transition From Preschool to P1	State-Funded Participants (N=106)	Eligible Non-Participants (N=100)	Non-Participants (N=52)
1	Pre-literacy skills development	3.09	2.62	3.12
2	Pre-math skills	3.16	2.70	3.29
3	Emotional development	3.08	2.86	3.19
4	Fine motor skill development	3.03	2.72	3.23
5	Gross motor skill development	3.16	2.99	3.35
6	Social skills development	3.22	2.97	3.38
7	Child-selected activities	3.35	3.09	3.48
	Teacher-directed activities	3.19	3.05	3.46
	Cooperative play	3.43	3.03	3.46
10	Creative or imaginative play	3.42	3.02	3.58
11	Makes friends	3.51	3.25	3.65
12	Follows directions	3.07	2.92	3.38
13	Uses words to solve problems	2.94	2.82	3.19
14	Functions independently	3.05	2.93	3.46
15	Joins in activities	3.46	3.28	3.62
16	At ease in school environments	3.70	3.35	3.62
17	Mean	**3.24**	**2.98**	**3.40**

Scale: 1=much worse 2= somewhat worse 3=no impact 4=somewhat better 5=much better.
State-Funded Participants and Eligible Non-Participants: significant differences on #1 ($p<.01$), #2 ($p<.01$), #9 ($p<.01$), #10 ($p<.01$), and #16 ($p<.05$).
State-Funded Participants and Non-Eligible Participants: no significant differences.
Eligible Non-Participants and Non-Eligible Participants: significant differences on #1 ($p<.05$), #2 ($p<.01$), #4 ($p<.05$), #7 ($p<.05$), #8 ($p<.05$), #9 ($p<.05$), #10 ($p<.05$), #11 ($p<.05$), #12 ($p<.05$), #14 ($p<.05$), and Mean ($p<.05$).

Figure 4 presents the data on the Pupil Behavior Inventory for the same groups of children described above. This figure indicates that the state-funded participants do better or are viewed by their teachers as being better adjusted to kindergarten than their peers who were eligible for but who did not attend the preschool programs.

Figure 4
Pupil Behavior Inventory for 1995-96 Kindergarten Readiness Cohort



**Pupil Behavior Inventory is a 5-scale rating system with 5 indicating either most frequently positive behavior or least frequently negative behavior.*

In addition, the state-funded participants were viewed as being as well adjusted or better adjusted than their peers who were not eligible in three of the five areas (i.e., classroom conduct, teacher dependence, and personal behavior). As indicated in Table 39 there were no significant differences between the state-eligible participants and the non-eligible children. However, there was a significant difference between the state-funded participants and the eligible non-participants in the factor on academic motivation. These data indicated that the Kentucky Preschool participants were viewed by their teachers as being significantly more academically motivated than their peers who were eligible for but did not attend the preschool programs.

Table 39
Mean Scores of Five Factors in the Pupil Behavior Inventory Rated by Kindergarten Teachers for 1995-96 Readiness Cohort

Pupil Behavior Inventory	State-Funded Participants (N=106)	Eligible non-participant (N=100)	Non-eligible (N=52)
1. Classroom conduct	3.77	3.64	3.73
2. Academic motivation*	3.30	3.01	3.55
3. Socio-emotional state	4.07	3.86	4.16
4. Teacher dependence	3.59	3.54	3.44
5. Personal behavior	4.17	3.95	3.86

**$p < .01$. Significant difference is found between Eligible non-participant and Non-eligible groups. No significant difference was found between participants and non-eligible groups, and between participants and eligible non-participants.

In summary, these data indicate that the Preschool Programs appear to be successful in preparing children for kindergarten. Children who attended the state-funded preschool programs consistently were viewed as being as prepared as their non-eligible peers and more prepared than their peers who were eligible for but who did not attend the state-funded preschool programs.

Evaluation Question #5

5. What are the long-term effects of participation in the Kentucky Preschool programs on former participants in five previous cohorts (1990-1991 through 1994-1995) on the following measures?:
    a. Academic Performance and Competence
    b. Expectations for Future School Success
    c. Social Skills
    d. School Attendance
    e. Referral for Special Services

Purpose

The purpose of this question was to determine to what extent participation in the Kentucky Preschool Programs continues to have an impact on the children as they move through the primary grades. Much of the research on preschool programs suggests that programs have immediate effects but that those effects fade out over time.

Participants

The participants in the longitudinal study included those preschool children who had been tested during each of the last five years. These children are now in Primary 1 (Kindergarten), 2, 3, 4, and 5 (Elementary). In addition, comparison groups of children for each cohort were identified as participants. The comparison groups consist of both children who were eligible for but who did not attend the Kentucky Preschool Programs and [illegible] who were not eligible for the preschool programs. The comparison group was selected in one of two ways (A detailed description of comparison group selection of previous cohorts is included in reports from previous years). Some comparison children were identified during their preschool year as being eligible for but not attending the preschool programs. Because these groups were always small, additional children were identified when they were in kindergarten. These children were randomly selected from the same kindergarten classrooms as the children who had been tested as state-funded participants the previous year and included children from all income levels. It is important to note again that the children in cohort 1 did not receive a full year of the program as it did not begin until the middle of the school year. Because it started late, and because it

was the first year, it is possible that the quality was not as high as in future years. This may explain differences in data of this cohort and subsequent cohorts.

Methods

In order to determine how well former Kentucky Preschool participants were achieving in the primary program, teachers were asked to complete the Primary Teacher Survey which required them to rate children in three areas: (a) attainment of Kentucky's Learning Goals; (b) performance in the curriculum domains; and (c) expectations for future success. Teachers were asked to judge whether the children were doing better than, as well as, or not as well as most children in their classroom. In addition, both parents and teachers were asked to complete the elementary version of the Social Skills Rating System. This instrument includes questions on social skills, problem behaviors and academic motivation.

These instruments were distributed to the parents and teachers as follows. A packet of forms for the teachers to complete were sent directly to the teacher with a stamped return-address envelope. In addition, parental packets were sent to the teachers for distribution to the appropriate parents. The parental packets also included a stamped return-address envelope.

In addition, KIRIS data on cohort 1 will be available in the Fall of 1996. Although cohort 1 students took this during the 1995-96 school year, we are not able to report the results as they were not available to us at the time this report was due. These data will be included in the 1996-97 report and will represent the first longitudinal standardized measures of child progress.

Results of the Primary Teacher Survey

The data from the Primary Teacher Survey are presented in Table 40 by cohort. The results are reported by the percentage of children who were rated as doing "better than" and the "same as" most of the children in the classroom. Data for both the program children and the comparison children are presented in the table. Data on three areas are included in these tables: (a) Kentucky's Learning Goals; (b) performance in the primary curriculum, and (c) expectations for future success. The comparison groups for each cohort of students represents a random sample of their peers including children from

higher income families. Given the nature of the control group and the goals of the program, we would expect that the state-funded children would be doing as well as or better then the comparison children.

Table 4
Percentage of Participants and Comparison Gro[up] Rated by Teachers As Doing Better Than and the Same as Most Children in T[he] lassrooms Across All Cohorts

Primary Teacher Survey	Kindergarten		First G[rade]		Second Grade		Third Grade		Fourth Grade	
	Particip. (N=227)	Compar. (N=66)	Particip. (N=170)	Compar. (N=54)	Particip. (N=198)	Compar. (N=107)	Particip. (N=211)	Compar. (N=88)	Particip. (N=95)	Compar. (N=97)
LEARNING GOAL										
Using basic communication & math skills	74.01	71.21	64.71	70.37	69.19	63.55	70.62*	56.82	60.00	69.08
Applying core concepts and principles	74.89	71.21	58.23	66.67	64.64	62.61	67.30	56.81	61.05	68.04
Becoming self-sufficient	78.85	75.76	68.23	75.92	71.22	67.29	69.67	60.23	70.53	70.10
Being a responsible group member	75.33	69.70	62.94	75.92*	69.70	66.35	69.20	67.05	56.32	71.13
Thinking and solving problems	68.73	62.12	57.65	66.67	59.59	61.69	64.93	52.28	60.00	63.92
Integrating new knowledge and past learning	71.37	72.72	64.12	74.07	65.65	65.42	68.72	57.96	65.26	67.01
PERFORM. PRIMARY CURRICULUM										
Reading	66.08	59.09	58.23	61.11	60.60	57.95	66.83	55.68	64.21	68.04
Mathematics	75.77	69.69	68.62	79.63	69.19	67.29	72.04	62.50	55.79	68.05
Writing	68.28	78.78	55.88	59.26	57.58	56.07	60.19	52.27	61.05	65.98
Social Studies	79.30	68.18	74.11	75.92	72.22	72.89	74.88	65.91	58.94	71.13*
Science	77.54	71.21	72.94	74.07	72.73	72.90	73.94	65.91	60.00	70.11
Art	76.21	80.30	85.88	88.89	85.86	82.24	83.42	80.68	81.05	82.48
Music	80.61	80.31	84.12	87.03	83.84	83.18	80.57	79.55	77.89	81.45

Continued

Primary Teacher Survey	Kindergarten		First Grade		Second Grade		Third Grade		Fourth Grade	
	Particip. (N=227)	Compar. (N=66)	Particip. (N=170)	Compar. (N=54)	Particip. (N=198)	Compar. (N=107)	Particip. (N=211)	Compar. (N=88)	Particip. (N=95)	Compar. (N=97)
Motor/PE	81.94	84.85	85.29	88.88	84.85	86.92	80.57	79.54	83.16	87.63
EXPECTATIONS										
Chances this child will be ready to progress to 4th grade as scheduled at the end of primary	75.33	68.18	61.76	70.37	68.18	71.97	72.04*	61.36	54.73	61.86
Chances of completing High School	77.98	80.30	72.35	68.52	70.70	72.90	75.83	72.73	72.63	77.32
Chances of successful transition to college, workplace, or military	56.39	63.34	53.53	51.85	54.04	44.86	54.50	47.73	38.95	58.77

*$p < .05$.

These data indicate consistent patterns across cohorts. Across all five cohorts (fourth graders to kindergartners), teacher ratings indicated that there were very few differences between children who had attended the state-funded program and a random group of their peers. For cohorts 3 and 5 (second graders and kindergartners), there were no differences between the two groups on any of the variables. This suggests that teachers perceive Kentucky Preschool children to be doing as well as a random group of their peers.

For cohort 2 (third graders), there were two significant differences. The preschool children were rated significantly higher than the comparison children in the area of "using basic communication and math skills". In addition, the teachers rated the state preschool children significantly higher than the comparison children on the item related to the extent to which the child would be ready to go to fourth grade. Across all other items, the teachers' ratings indicated no significant differences between the two groups.

Finally, for cohorts 1 and 4 (fourth graders and first graders), there was one area in which teachers rated comparison children significantly higher than Kentucky Preschool children. The comparison children in cohort 1 were rated significantly higher that the Kentucky Preschool children in terms of how they were doing in social studies, while the comparison children in cohort 4 were rated significantly higher that the state-funded preschool children on the item "being a responsible group member". However, across all other items, there were no significant differences across the two groups.

The data from the Primary Teacher Survey across all cohorts of children indicate that there are very few significant differences between the Kentucky preschool children and the comparison children. Given that the children in the comparison include children from higher income families, these data suggest that the Kentucky Preschool Programs are achieving their goal of preparing children from low income families for school so that they will be as successful as their peers.

Results of the Social Skills Rating System

Table 41 provides data on teacher and parent ratings of the children's social skills, problem behaviors and academic motivation. These data were obtained from the Social Skills Rating System that was completed by both parents and teachers. A higher score on the social skills and academic motivation portions of the scale indicates a more positive finding. That is, a higher rating indicates a higher level of social skills or academic motivation. However, a higher score on the problem behavior portion of the instrument represents a less positive finding. That is, a higher score represents a higher frequency of problem behaviors.

Table 41
Kentucky Preschool Program Participants and Comparison Children's Ratings on the Social Skills Rating System by Teachers and Parents Across All Cohorts

		Kindergarten		First grade		Second grade		Third grade		Fourth grade	
		Particip.	Compar.	Particip.	Compar.	Particip.	Compar.	Particip.	Compar.	Particip.	Compar.
Social Skills											
Teachers	M	97.71	99.45	96.15	100.93*	96.27	97.72	99.21	97.64	98.92	102.22
	N	228	66	170	54	199	106	212	86	96	99
Parents	M	99.05	93.07	95.34	100.40	94.87	99.67	98.72	99.38	96.25	102.22
	N	108	30	79	25	89	49	90	40	32	46
Problem Behaviors											
Teachers	M	101.89	104.76	104.17	99.13*	104.68	102.39	104.52	105.43	103.42	100.08
	N	228	66	170	54	199	106	212	86	96	99
Parents	M	102.71	104.67	104.96	101.20	104.52	104.47	102.84	103.28	108.31	101.98
	N	108	30	79	25	89	49	90	40	32	46
Academic											
Teachers	M	93.26	93.64	90.91	94.50	91.08	92.28	93.47	90.88	90.29	92.81
	N	227	66	170	54	199	106	212	86	96	99

*$p < .05$.

The data from the Social Skills Rating System Questionnaire reflect a trend similar to the trend observed in the data from the Primary Teacher Survey. In general, there are relatively no significant differences between the parent and teacher ratings for the state preschool and comparison children. With the exception of cohort 4, there are no significant differences between the state preschool children and the comparison children on any variable. For cohort 4, the teachers rated the comparison children as having significantly better social skills and significantly fewer problem behaviors than the state preschool participants. However, for cohort 4, there are no significant differences in parent ratings of social skills and problem behaviors or teacher ratings of academic motivation.

In summary, the data from the Primary Teacher Survey and the Social Skills Rating System Questionnaire indicate that participation in the Kentucky Preschool Programs continues to have an impact on children as they move through the Primary Program. With only a few exceptions, the state preschool children continue to do as well as a random group of peers through the fourth grade on most measures of social skills and academic progress. Because the comparison group includes a random group of peers, we would not expect for the Kentucky Preschool children to be doing better than the comparison group. Based on these data, the program appears to meeting the goal of "giving children a head start so they will not fall behind".

Attendance Data

The attendance data for children in all five follow-up cohorts (1, 2, 3, 4, 5) are presented in Table 42. These data indicate that, on the average, there is no difference between the Kentucky preschool children and the comparison children in terms of the number days they are absent and present. The greatest difference between the two groups in terms of the days they were absent is 1.58 days (Cohort 5).

Table 42
Average Attendance Information of Kentucky Preschool Program Participants and Comparison Children of Cohorts 1 through 5 in 1995-96 Study

Cohort (Grade)		Kentucky Preschool		Comparison	
		Present	Absent	Present	Absent
1 (4th Grade)	M	115.20	5.28	120.47	3.98
	N	93	94	96	96
	SD	11.49	5.87	8.49	4.03
2 (3rd Grade)	M	116.86	4.40	117.04	4.63
	N	210	210	85	85
	SD	13.91	4.44	11.83	4.87
3 (2nd Grade)	M	114.23	5.26	116.57	4.70
	N	194	194	106	106
	SD	14.88	5.34	16.56	6.51
	M	113.73	6.27	113.75	5.67
	N	167	168	54	54
	SD	17.44	7.52	10.10	5.86
5 (Kindergarten)	M	112.10	8.08	114.52	6.50
	N	224	224	65	65
	SD	16.58	9.31	15.63	6.32

Teachers reported number of days that children were present and absent as of May 15, 1996.

Table 43 provides information on the percentage of children in each cohort who were referred to and who received extended school services, Chapter 1 services, Family/Youth Service Center services, or Special Education services. For Cohorts 2 to 5, there were no significant differences in the percentage.

Table 43
Percentage of Kentucky Preschool Participants and Comparison Children Referred to and Receiving Services in 1995-96 Study

	Services referred				Services received			
	ESS	CH 1	FR/Y	SE	ESS	CH 1	FR/Y	SE
Cohort 6 (Preschool)								
Participants (N=291)	0.00	0.00	9.28	21.65	0.00	0.00	7.90	20.62
Cohort 5 (Kindergarten)								
Participants (N=227)	4.41	11.89	6.17	12.33	2.64	8.81	4.41	8.81
Comparison (N=66)	4.55	9.09	6.06	7.58	0.00	7.58	4.55	6.06
Cohort 4 (Grade 1)								
Participants (N=170)	22.94	41.76	11.18	13.53	8.82	37.06	7.65	11.18
Comparison (N=54)	24.07	50.00	14.81	7.41	12.96	44.44	11.11	5.56
Cohort 3 (Grade 2)								
Participants (N=198)	27.78	40.91	5.56	13.64	16.16	37.37	5.05	11.62
Comparison (N=107)	28.97	37.38	4.67	13.08	17.76	34.58	1.87	8.41
Col[illegible] (Grade 3)								
[illegible]ipants (N=211)	31.75	34.12	6.64	13.74	18.01	29.86	4.27	9.95
Co[illegible]ison (N=88)	40.91	35.23	9.09	19.32	27.27	34.09	6.80	14.77
Cohort 1 (Grade [illegible]								
Participants (N=95)	42.11*	38.95	17.89***	16.84	29.47	37.89*	11.58**	12.63
Comparison (N=97)	27.84*	26.80	3.09***	15.46	17.53	21.65*	2.06**	11.34

ESS Extended School Services.
CH 1 Chapter 1.
FR/Y Family resource / Youth Service Center.
SE Special Education.
*$p<.05$.
**$p<.01$.
***$p>.00$.

There were significant differences between the comparison children and the Kentucky Preschool children in cohort 1 in terms of the percentage of children who were referred to

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services and the percentage of children who received services. State-funded children were more likely to be referred to both extended school services and the Family Resource Centers than the comparison children. In addition, the sate-eligible children were more likely to receive Chapter 1 services and Family Resource Center services than the comparison children.

In summary, these data indicate that children who attended the Kentucky Preschool Programs are not more likely to be referred to or to receive special services than a random group of their peers at least through the 3rd grade. However, the data indicate that there are differences between the two groups once they reach 4th grade. These differences should be viewed with caution as these children attended the Kentucky Preschool Programs during the first year of implementation. The program quality data we collected in previous years of the project suggest that the quality of the programs improved substantially after the first two years.

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